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HOUSEFURNISHINGS

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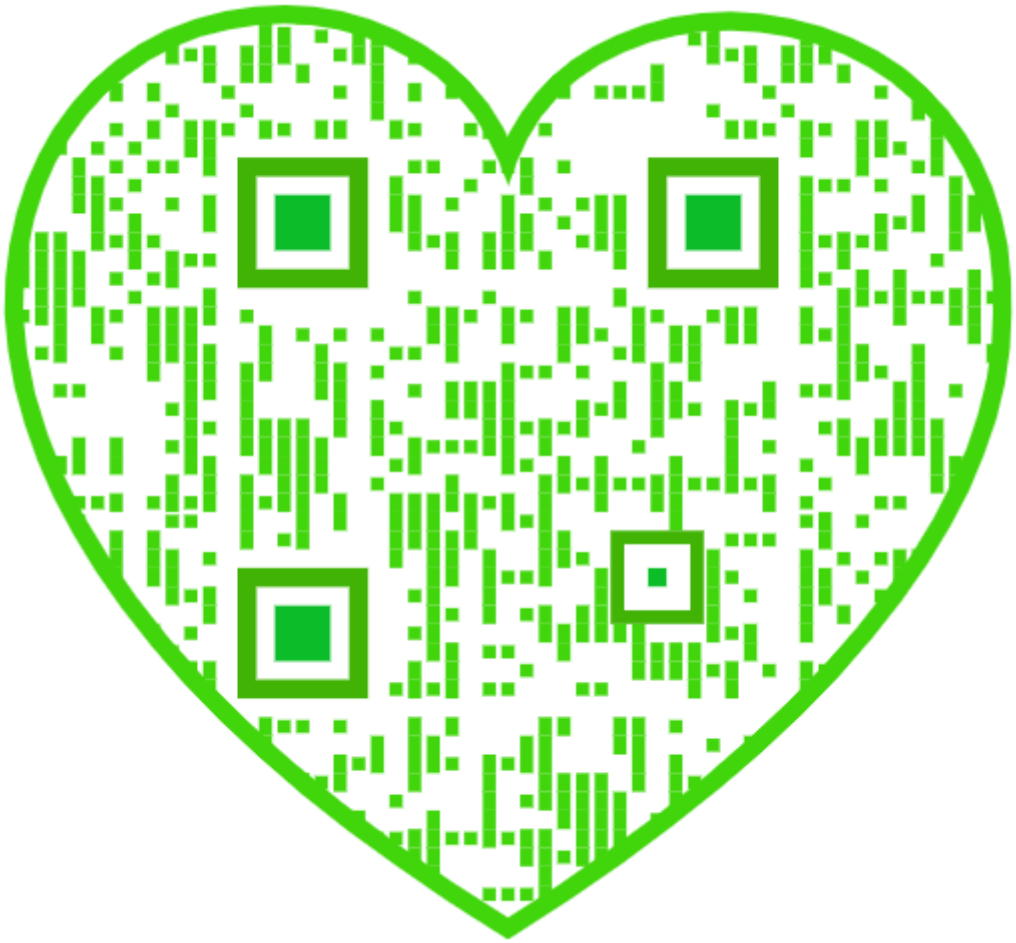

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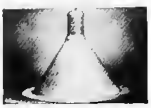

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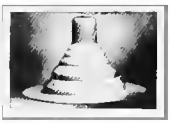

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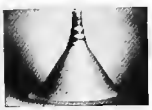

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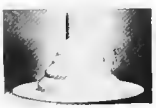

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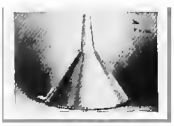

Finished Funnel

Courtesy Aluminum Cooking Utensil Co.

Some of the Operations in Stamping a Funnel

MERCHANDISE MANUAL SERIES

HOUSEFURNISHINGS

KITCHENWARE AND LAUNDRY EQUIPMENT

BY

E. LILLIAN HUTCHINSON

Formerly Secretary of Department Store Education Association

NEW YORK

THE RONALD PRESS COMPANY

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This Series is Dedicated

to Mrs. Henry Ollesheimer, Miss Virginia Potter, and Miss Anne Morgan, who desiring to give greater opportunity for advancement to commercial employees and believing that all business efficiency must rest upon a solid foundation of training and education gave years of enthusiastic service to the testing of this belief.

MERCHANDISE MANUAL SERIES

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EDITOR'S PREFACE

As "Department Store Merchandise Manuals" these books were originally written for salespeople and were designed to give them reliable information concerning the sources and manufacturing processes of the merchandise which they handle. When it was necessary to deal with scientific or historical material it was treated as simply and concretely as possible and the point of view taken was that of business rather than that of the school or laboratory. In this form they have proved their practical value not only to the department store salesperson but in the specialty shop. It has been pointed out, however, that the material has a wider scope than that of sales manuals alone.

As reference books, librarians will find the short, clear statements and full indexes invaluable.

As an encyclopædia of merchandise the series contains scientific information in a simple, compact form which makes it available for children and others to whom the subjects treated are unfamiliar.

As textbooks they are adapted for use in commercial schools, high schools, night schools, settlement classes, and by teachers of household arts and domestic science.

As source books for practical story-telling, kindergartners, primary and vacation school teachers will find in them an abundance of interesting material for short "true" stories on the various industries and crafts, the manufacture of household articles, such as pins and needles, as well as the making of pottery, glass, and steel. These manuals contain just the material often hunted for in vain by teachers and librarians.

As household helps and shopping guides the young housekeeper will find the manuals her best friends because they not only describe the manufacturing processes but tell her how to distinguish well-made articles of good materials from the inferior and badly made. They also tell her how to care for the clothing or household goods which she has bought.

For salespeople and storekeepers they supply the general and specific information about their merchandise which is indispensable to efficiency, yet very hard to gather from the scattered sources upon which they now depend.

These changes should enlarge the usefulness of the manuals without losing any of their specific value in the field of salesmanship.

We wish to express our grateful appreciation to the manufacturers and experts who have given us such valuable counsel and cordial co-operation.

BEULAH ELFRETH KENNARD.

AUTHOR'S PREFACE

This manual treats of a department which carries in some respects the most commonplace, although at the same time the most indispensable, stock of any department. Because of its universal usefulness, this stock makes a popular appeal. An understanding of the composition of the articles of daily service in the household and their methods of manufacture, an appreciation of correct methods of use, and a realization of the comparative values of different utensils in proper housekeeping, are extremely important to the salespeople and the customers.

The limits of space have necessitated the omission of the more specialized parts of the stock, such as vacuum cleaners, washing machines, electrical apparatus, mangles, and hardware. But the greater part of the stock is discussed.

The author has gathered most of the material with the help and co-operation of manufacturers who have been ready and willing to furnish the desired information. Those to whom thanks are due are: Mr. G. D. Colborn, Manager Demonstrating Sales Department, Aluminum Cooking Utensil Co., New Kensington, Pa.; Mr. W. H. Wagner, Wagner Manufacturing Co., Sidney, O. (aluminum); Mr. A. M. Cander, Advertising Manager, National Enameling & Stamping Co., Milwaukee, Wis.

(enameled ware); Mr. W. C. Stone, General Manager, National Veneer Products Co., Mishawaka, Ind.; The Alaska Refrigerator Co., Muskegon, Mich.; Mr. C. H. Leonard, Grand Rapids Refrigerator Co., Grand Rapids, Mich.; The Toledo Cooker Company, Toledo, O.; Mr. John S. North, North Bros. Manufacturing Co., Philadelphia, Pa. (ice cream freezers); Auto Vacuum Freezer Co., New York City; Charles Zinn & Co., New York City (baskets); and for reading several of the chapters, Mrs. E. H. Mays, formerly instructor of Domestic Science, Pratt Institute, Brooklyn, N. Y., and for other information, Mr. Charles B. Rosengren, Associate Editor, *Housefurnishing Review*.

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E. LILLIAN HUTCHINSON.

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HOUSEFURNISHINGS

Chapter I

THE HOUSEFURNISHINGS DEPARTMENT

Attractiveness of the Department

The one word which best describes the merchandise of the Housefurnishings Department is "practical." Utility, rather than beauty, is the chief requirement. Nevertheless the shining rows of silvery aluminum and tinned ware, the sanitary whiteness of the japanned and enameled ware, the substantial strength of the gray enameled utensils, make a really artistic appeal.

Besides, there is a peculiar attraction in the freshness and newness of the things which we are accustomed ordinarily to see with the marks of usage upon them in the home.

Special Attractions to the Salesperson

In department stores most of the salespeople in the Housefurnishings Department are women. As the

great majority of women are inclined to be domestic, and as the kitchen is the very center of the home, the stock has a peculiar intimacy which the stock of other departments does not possess. Therefore, in this department the saleswoman has an opportunity to combine her ability in selling with her knowledge and love of home affairs.

Moreover, because courses in domestic science and cookery are given in most schools today, the saleswoman needs to be particularly well-informed upon the uses and characteristics of her stock so that she may be able to answer customers' queries intelligently.

Divisions

In the store the Housefurnishings Department is usually divided into sections according to the materials of which the articles are made, as:

Aluminum ware	Wire goods
Gray enameled ware	Galvanized ware
Blue enameled ware	Woodenware
White enameled ware	Earthen- and glassware
Tinned ware	Cleaning implements
Japanned ware	Laundry equipment
Iron and steel ware	Special articles

In this manual, Part I is devoted to a study of the various materials, and then in Part II the stock is

studied in a new grouping, so as to call attention to such features as are likely to be of particular interest to the customer.

According to purpose the division therefore is:

- Utensils for cooking
- Utensils for preparing foods
- Cleaning equipment
- Laundry equipment
- Special articles:
  - Refrigerators
  - Ice-cream freezers
  - Fireless cookers
  - Kitchen tables
  - Baskets

Part I — Materials and Manufacture

Chapter II

IRON AND STEEL WARE

Extent of Use

A very large number of the articles of the House-furnishings Department are made entirely or partially of iron or steel. Until recently, iron was the most commonly used material. Although newer materials have replaced it to some extent, it still occupies a very large place in the department.

Forms in Which Iron and Steel Appear

Iron and steel are found in household utensils in coated and uncoated form.

Uncoated they appear as:

Cast iron
Wrought iron
Steel

They are the foundation material for:

Enameled ware
Tinned and japanned ware
Galvanized ware

Articles Made of Each Form of Iron

Cast iron appears in parts of machinery, such as wheels of egg beaters, gears of ice-cream freezers, etc., and in the following articles:

1. For the stove:
   - Teakettles
   - Kettles and pots
   - Frying pans
   - Skillets
   - Griddles
   - Waffle irons
   - Ham boilers
   - Flat-irons
2. For the oven:
   - Dutch ovens
   - Roasting pans
   - Muffin pans

Wrought iron was formerly used as the foundation of coated ware, but today steel, because of its superior flexibility, has practically supplanted the iron for this purpose. Russia iron is a special form of wrought iron used for roasting pans, baking pans, and drip pans.

Steel, because of its great strength, is widely used. The best quality is used for cutlery. Other articles made of uncoated steel are:

1. For the stove:
   - Frying pans
   - Frying kettles
   - Skillets
   - Griddles
2. For the oven:
   - Roasting pans
   - Bread pans

Process of Manufacture of Iron—The Ore

While iron ores are abundant, iron itself is never found free, but always in combination with other elements. Therefore, the first step in the production of iron is to separate it from the ore, which is done in the blast furnace. The method was first used in Germany in the fourteenth century.

Blast Furnace

The blast furnace process is a most interesting one. A blast furnace consists of two divisions:

1. A tall stack or chimney lined with fire brick, into which the iron ore, fuel, and fluxing material, that is, material which helps to melt the iron and cause it to flow, are dumped from the top and in which they are all reduced and melted.
2. A crucible called the "hearth" of the furnace for collecting the molten products.

The stack may be 60, 80, or even 100 feet high. It is really a steel shell with a fire-brick lining. It is not a perfect cylinder like a chimney, but widens out gradually from the top to a point about two-thirds of the way down and then narrows quickly to the hearth. The widest part is called the "bosh." The top of the stack is closed with a funnel arrangement called the "bell and hopper."

The hearth has straight sides and various openings, some of which are for pipes — called " tuyeres"— connected with a stove which sends through them strong blasts of heated air. There are also two small openings in the front of the hearth, one at the bottom of the furnace and the other above it at the side. When the furnace is working these are usually stopped with clay.

On the outside of the furnace is machinery for hoisting the ore and other materials to the top where they are dumped in.

The fuel is coke, a form of bituminous or soft coal, which has had the gases and impurities burned out of it. The " flux " is limestone.

As the ore, limestone, and coke fill the stack, blasts of hot air are forced up from the bottom. Soon the intense heat from the fuel melts the ore and limestone and the elements separate. The iron falls to the bottom of the hearth, taking up some of the carbon from the coke on its way.

The lime, alumina, and ash from the coke are lighter than the molten iron, and therefore lie on top of it in the form of slag, while the waste gases pass off through a vertical pipe, or " downcomer."

At periods averaging six hours each, the hole in the hearth-front on the level of the melted slag is tapped by pushing in the clay stopper opposite, and the slag is drawn off through sand gutters or into great pots

called ladles, and thence into water pits where it is granulated.

From twenty to thirty hours after the furnace is lighted the clay stopper in the lowest hole in the hearth is punctured and a stream of liquid iron flows out, gradually enlarging with the flow.

The brilliant seething mass runs into a long trench, or gutter, cut in sand, which has small side trenches crossing it at right angles. The side trenches are 40 inches long, 4 inches wide and 4 inches deep.

The entrances to the side trenches or molds are all closed with iron gates until the iron has reached the bottom one, which it fills first. The gates are then removed from each in turn until the whole series are filled, sand is sifted over the metal, and water sprayed upon it so that it is soon hard enough to be broken away from the channel. The channel itself is then broken up. From some fancied resemblance the bars have always been called "pigs," and the iron at this stage is called "pig iron."

Figure 1 shows a blast furnace with the long trench and pig beds.

The iron from many blast furnaces is no longer run into a "pig bed" but into ladles or pots made of iron lined with firebrick. These pots are on trucks which may be rolled directly to the steel mill, and the contents subjected to further treatment.

Pig iron is the most impure form of iron, containing

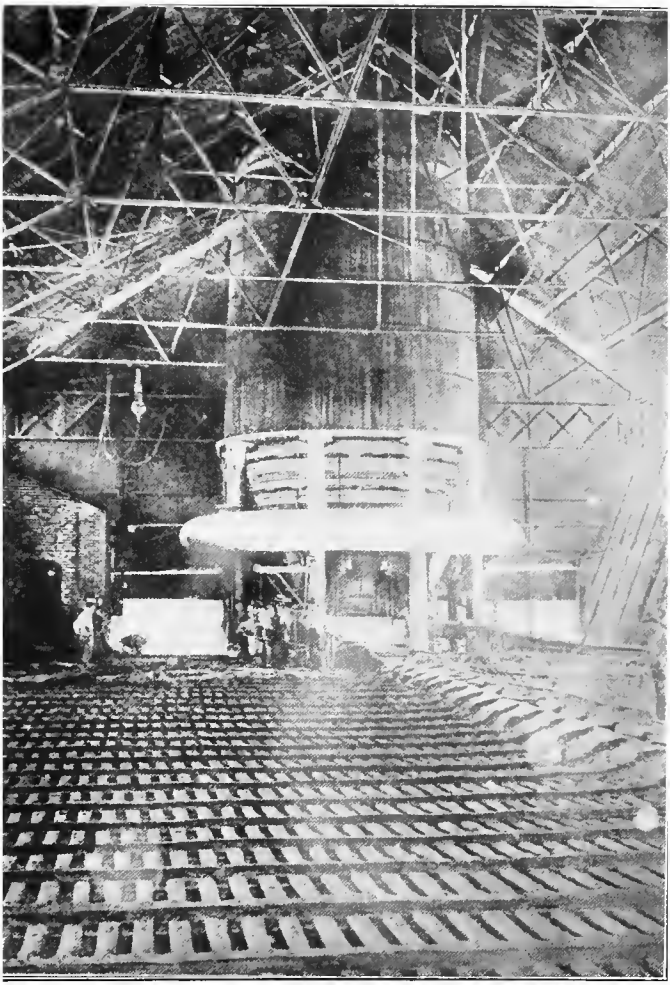


Figure 1. Blast Furnace and Pig Beds

about three parts carbon and a number of other elements in small quantities. It is hard and brittle; it cannot be hammered nor drawn out into wire — that is, it is not malleable nor ductile — nor can it be welded.

For cast iron it is remelted and cast into molds without any change in its composition. For wrought iron or steel it must go through refining processes.

Casting

The remelting for casting is done in a cupola furnace, somewhat similar to the blast furnace, but smaller. The pig iron, limestone, and coke are placed together and a blast of air, this time cold, is forced through the mass. When the iron is thoroughly fluid, it is run into ladles, from which it is poured into sand molds, the interiors of which are the shapes of the objects to be cast. The melted iron expands and is forced into every part of the space. As the castings cool they shrink, so that they are smaller than the molds.

Imperfections sometimes occur in castings. Blow holes or small cavities are caused by dissolved gases, which form bubbles of gas that cannot escape. Jarring the mold after the iron is poured in sometimes produces imperfect shapes. That is sometimes the reason why the wheels of cast iron egg beaters or other pieces of machinery fail to work smoothly.

Finishing

When the cast articles are removed from the molds they are rough and must be polished. For this purpose there are three materials which are generally used, silica, emery, and carborundum.

Silica is sand. It may be forced by a sand blast against the articles to be polished, or they may be held against a grindstone or an oilstone, which is a solid form of silica.

Emery is an impure form of the mineral corundum and is used either in the form of a powder or pressed into wheel shape.

The hardest polishing material is carborundum, which is made from coke and sand in the electric furnace. It is crushed to a powder and used on wheels.

After polishing, the cast iron article is ready for packing and shipping.

Characteristics of Cast Iron Ware

It will be noticed that a very large number of the articles which are made of cast iron are those which are obliged to stand a high degree of temperature without melting. Frying kettles are universally of cast iron. The highest cooking temperature is reached in frying and it is essential that the utensil be able to withstand this temperature. There is the same requirement in the case of griddles and waffle irons.

The wearing qualities of iron are very great. A

muffin pan is often handed down from generation to generation, and as it grows old becomes smoother and finer.

Many of the uses to which cast iron is put depend upon the great weight of the article. For instance, it is essential that grinders, squeezers, scales, etc., be solid and substantial.

Care of Cast Iron Ware

Cast iron ware is often supposed to be difficult to keep clean. A great many of the difficulties could be removed by giving new articles a preliminary treatment.

New cast iron ware, which is to be used for cooking, should be coated on the inside with tallow and allowed to stand for a few days, then heated until the fat melts, and washed in hot water and washing soda. Rinse in hot water and wipe dry, rubbing very hard.

After this it is only necessary to fill the article with water after using and let it stand until ready to wash. It should be washed with hot soapy water, outside and inside, rinsed, and thoroughly dried.

Iron that is put away and not used for a time should be coated with paraffin to prevent rust.

Wrought Iron

Wrought iron is converted from pig iron by a process called "puddling" in a reverberatory furnace. This is

a low rectangular fire-brick chamber divided into two unequal parts by a wall which does not extend to the top of the furnace.

The larger portion is called the working chamber and the smaller one the fireplace. The fuel is bituminous coal with a long flame which passes over the wall and melts the iron and slag in the working chamber without bringing it in contact with the fuel. The mass is stirred around with a "rabble" until the carbon is eliminated and the pure iron floats as globules in the slag which has a lower melting point.

These globules are collected in balls, the slag is squeezed out, and they are ready for the finishing processes.

Wrought iron, which is the purest form of iron, is soft and has a fibrous structure. When heated it becomes plastic before it reaches the melting point, and may be rolled into thin sheets or rounds, and when cold worked into many other shapes.

Steel

In the Housefurnishings Department steel is found in the form of cutlery, in a few of the better grade utensils, ordinarily of cast iron, and in the sheet foundations of the coated ware.

Steel is iron which has been greatly hardened by mixing with it a definite amount of carbon. This process has made it malleable, weldable, fusible, and

capable of being tempered. The manufacture of steel is one of the greatest industries of this country. It is centered around Pittsburgh, Pa., because of the near location of fuel, coal, coke, and natural gas, which are needed in manufacturing.

Steel differs from cast iron, not only in the amount of carbon which it contains, but also in the form in which the carbon appears.

There are three kinds of steel, depending on the percentage of carbon which each contains. They are high-carbon, medium-carbon, and low-carbon steel. The kind used for cutlery is high-carbon, although some cheap grades are made of medium-carbon steel.

Methods of Making Steel

There are three methods of making steel from pig iron. These are:

Bessemer
Open hearth
Cementation

Bessemer Process

The Bessemer process, named from Henry Bessemer who patented it in 1855, is as follows: First the pig iron is poured into a pear-shaped vessel called a converter. This vessel is made of steel plates riveted together to form a shell which is lined with ground quartz or silica. The vessel is turned down to a hori-

zontal position and 8 to 15 tons of molten iron are poured into the smaller end. The great pot is then turned up again and a blast of air is blown through it.

The carbon in the iron soon bursts into flame and in a few minutes the carbon is burned out and most of the other impurities removed. The flame then dies down, fresh carbon is added in the form of "spiegeleisen," which supplies exactly the amount required, and the process is finished.

Open Hearth Process

In the open hearth process the pig iron and scrap are melted in a dish-shaped chamber, or hearth, containing about 50 tons. At each end of the chamber are openings which admit the fuel gas and air, and at the rear a tapping hole to let out the steel when the process of conversion is completed.

Cementation Process

The cementation process is the one used for making fine tool steel and cutlery. The cementation furnace consists of two converting pots or chambers from 8 to 15 feet long, 3 or 4 feet wide, and 3 feet deep. These are placed side by side with the fire beneath them. The bars of white cast iron or of wrought iron are placed in the pots and completely surrounded by carbon in the form of charcoal. The pots are closed so that

they are air-tight and the temperature of the furnace kept at 1000° C. or over for three or four weeks.

By this process the carbon has been absorbed by the iron, but it is not evenly distributed through the bar. The center of the bar may not be changed at all. In that case, the bars must be cut up and melted, or else reheated, hammered, and rolled.

When cast iron is put into the cementation furnace the processes of purifying and carburizing, that is, combining with carbon, are combined. For producing fine tool steel, wrought iron is used.

Electric Furnaces

The electric furnace is coming into use in making wrought iron and steel, as there are no impurities to be absorbed from the fuel and therefore the process is simpler and the product better. The greater cost has thus far prevented a more general change. Steel for tools or cutlery must be annealed, hardened, and tempered before it is ready for use.

Properties of Steel

Steel which has only a low percentage of carbon has the same properties as wrought iron. While it melts only at a very high temperature, it is soft enough to be welded, and is ductile and malleable. As the carbon is increased these qualities are all lessened, and high-carbon steel would be very brittle if it were not tem-

pered. This process does not make it less hard, but renders it extremely tough and strong.

Annealing

Annealing is the process of softening metals and increasing their flexibility and ductility by heating them very hot and cooling them slowly.

Hardening

Hardening steel is accomplished by heating it to a red heat and cooling it suddenly. This process not only makes it harder but also more brittle and less elastic.

Tempering

Tempering is a process applied only to hardened steel by which a part of its brittleness is drawn out and it is rendered tougher. This is done by reheating the steel and cooling it gradually but not so slowly as for annealing.

Steel is hardened by bringing it to a red heat and plunging it into water or brine. It may then be tempered by putting it into a sand bath or in oil. The sand is heated by a fire beneath it and the steel is placed on top of the sand until it reaches the desired temperature, which is indicated by its color. The higher the temperature used, the softer will be the steel which results. The following table shows the varying degrees of temperature, color, condition, and use:

Temperature	*Color*	*Condition*	*Use*
430–450° F.	Pale yellow	Keen edge, hard	Razors
470	Dull yellow	Fine cutting edge	Penknives
490–510	Brown	Fine cutting edge	Shears
520	Purple	Softer, flexible	Table knives
530–570	Blue	Softer, very flexible	Watch springs Sword blades
610	Black	Extremely flexible	Saws and wood-working tools

Tempering in oil can be gaged by the thermometer, as the steel cannot become hotter than the oil. It is therefore a more accurate method. To harden the edge or point of a tool its cutting edge may be plunged at a bright red heat into water, and tempered by allowing the heat which remains at the other end to reheat it up to the desired temperature and then quenching it again.

Russia Iron

Russia iron is used for roasting pans, baking pans, and also for stove pipes, patent elbows, etc. It is a special grade of sheet iron with a glossy black, slightly mottled appearance, due to oxide adhering to the surface so tenaciously that it cannot be cracked off by repeated bendings. It is produced by passing a pack of heated sheets back and forth under a steam hammer, the bit and anvil of which have indentations on their surfaces. Sometimes charcoal powder is sifted between the sheets before heating. In the trade it is known as "planished iron."

Coated Ware

The principal drawback which has always attended the use of iron and steel is the great tendency of the metal to rust or corrode. Not only does it rust easily, but when the process once starts it proceeds rapidly, soon destroying the article. Iron differs from most metals in this particular. In all other metals the deposit formed on the surface of the metal protects it from further corrosion. This is seen in the case of copper, which is used for the rain spouts of buildings. In a short time the atmosphere causes a beautiful green coating to appear, and this is a protection to the metal.

Many methods have been devised for protecting iron from air and rust, such as enameling, tinning, galvanizing, painting. All except painting are used in making some of the articles in the Housefurnishings Department.

Making the Foundation

The iron or steel foundations for coated ware are stamped out by dies from sheet iron or sheet steel, a separate die for each "size" of each utensil.

Kinds of Dies

The machines used for stamping and shaping the material are of many kinds and styles, and their work is sometimes so intricate as to seem almost miraculous. The principal classes of dies are:

Cutting dies
Bending and forming dies
Perforating dies
Curling, wiring, and seaming dies
Drawing dies

Cutting Dies

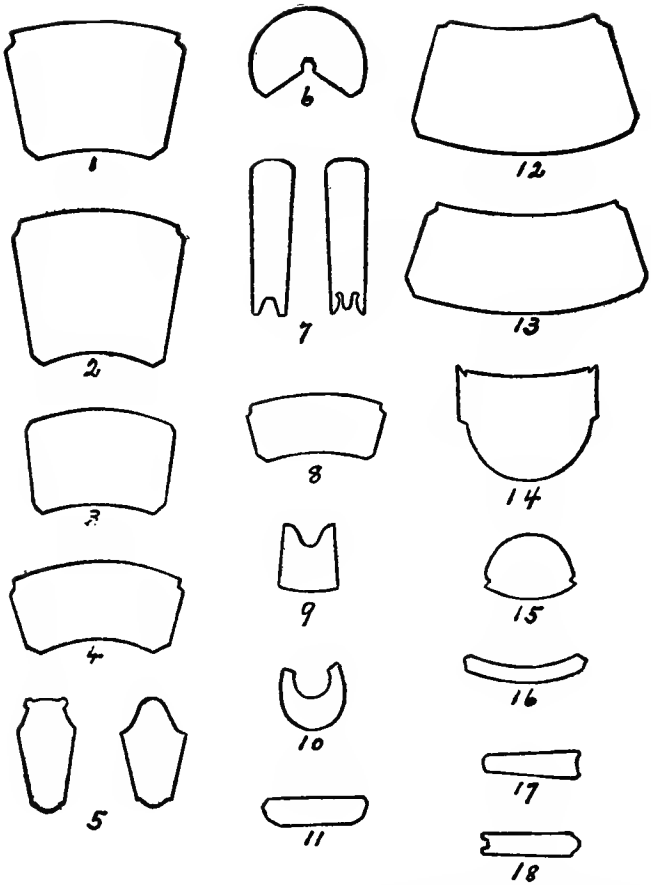
Cutting dies are the simplest forms. They consist of two parts, the die or die plate, and the punch, operated in a power press. The sheet of metal which is to be cut, called the "blank," is placed on the die plate and the punch falls on it and cuts out the desired shape. Pieced or seamed utensils are made from pieces so cut out. These dies are also called blanking dies.

Besides the simple blanking dies, there are dies which perform several operations at once and others which stamp out a number of pieces at one time.

Figure 2 shows the blanks of parts of several kitchen utensils formed by cutting dies.

Bending and Forming Dies

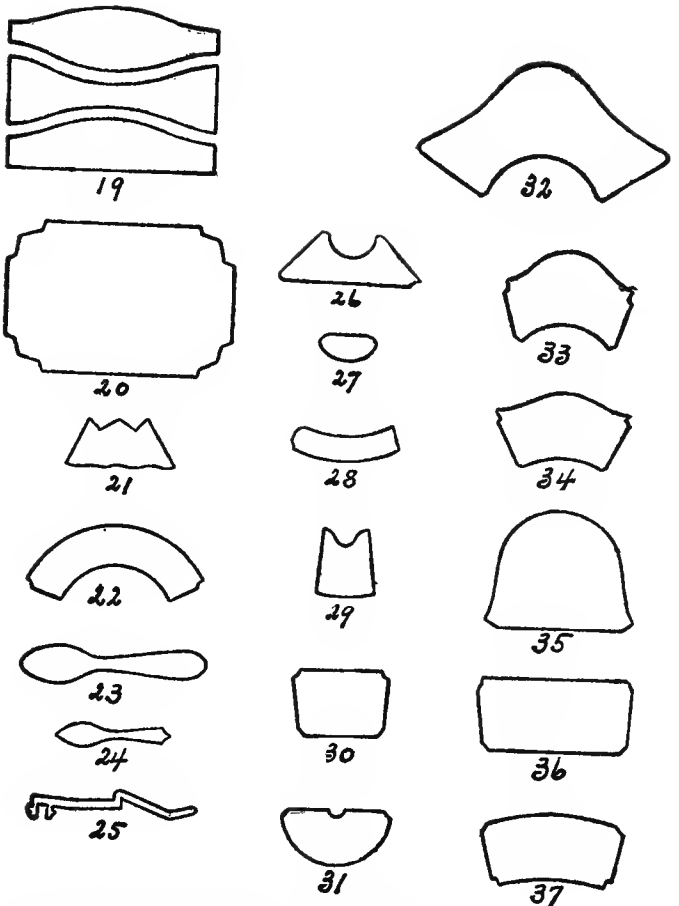
These dies have more complicated parts. The die and the punch are so constructed that as the punch presses down it bends the metal into the shape desired, the work being held in place by a spring pad. Hinges, latches, hooks, and many small articles are made in this kind of die.



From "Dies, Their Construction and Use,"

Figure 2. "Blanks" of

1. Dishpan
2. Flaring Pail
3. Lard Pail
4. Milk Pan
5. Tea and Coffee Pot Spouts
6. Oil can Breast
7. Dipper Handles
8. Dipper Bowl
9. Scoop Handle
10. Scoop Boss
11. Dishpan Handle
12. Coffee Pot
13. Coffee Boiler
14. Scoop Body
15. Scoop Back
16. Scoop Band
17, 18. Cup Handles



by courtesy of Norman W. Henley Publishing Co.

Various Kitchen Utensils

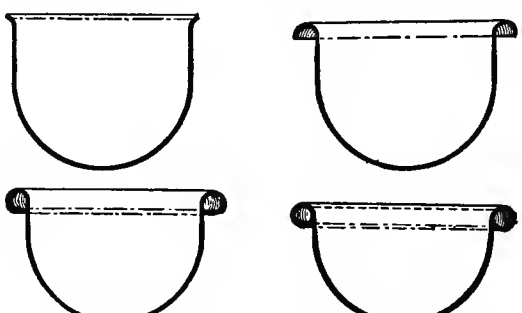
19. Stove Pipe Elbow
20. Dripping Pan
21. Dripping Pan Notch
22. Gravy Strainer
23, 24. Spoons
25. Writing Machine Lever
26. Coal Hod Hood
27. Coal Hod Back Handle
28. Coal Hod Rim
29. Dustpan Handle
30. End Piece — Deep Breadpan
31. Funnel Body
32. Coal Hod Body
33. Coal Hod Front
34. Coal Hod Back
35. Dustpan
36. Side Piece — Deep Breadpan
37. Measure Body

Perforating Dies

The dies used in making the holes in colanders, skimmers, graters, can tops, and similar articles have a series of sharp punches in rows. They are called perforating dies.

Curling and Wiring Dies

These dies are used for curling over the tops of the cans, basins, milk pans, or other sheet metal articles. The wire is added to give greater strength and stiffness.



From "Dies, Their Construction and Use," by courtesy of Norman W. Henley Publishing Co.

Figure 3. Steps in Curling the Edge of a Utensil

If the vessel has straight sides the curling may be done with one stroke of the press, but if the sides slant the top must first be bent over and then caught in the curling groove and curled.

Seaming is the permanent joining of two metal

edges. It may be done by simply hooking the bent edges over each other, or, for a locked seam, a double fold is made. For the double seaming of such pieces as the bottoms of teapots, pails, and similar articles, special machinery is used.

Figure 3 shows how the curled edge of a half-round dish is formed by the pressure of a die. In the first stage the metal has commenced to curl, in the next it has curled to a half-circle, in the third it has begun to turn back on itself, and in the last it curls to a full circle.

Drawing Dies

Drawing dies are used in the manufacture of articles from ductile metals such as wrought iron, steel, tin, copper, brass, and aluminum. By means of these dies a flat piece of metal can be drawn into a deep vessel by pressure and tension alone.

There are four types of drawing dies:

Simple push-through dies
Punching and drawing dies with double-acting press
Punching and drawing dies with single-acting press
Triple-acting dies

The simple push-through dies take the blank after it has been stamped out in a blanking die, and while the

edges are held firmly the punch presses and pushes it down to the desired length of the shell.

The combination dies cut out the blank, draw it into shape, and sometimes finish it off. The double-acting presses can turn out articles of almost any shape, the number of operations depending on the thickness of the metal. If the shape is simple and straight-sided, a push-through die is used. For tapering or irregular shapes the die plate must have a solid bottom of the shape required into which the punch fits.

The single-acting presses can be used only for shallow articles, such as the tops for cans.

Triple-acting presses are the same in principle as the solid bottom double-acting ones, cutting, drawing, forming, and stamping or lettering the shell by one continous process.

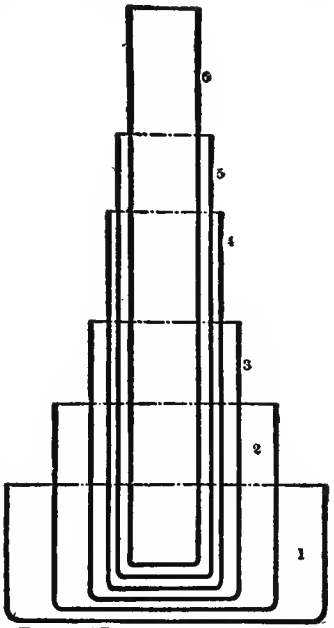
Successful Drawing

The successful drawing of metal in dies depends on the firm, even pressure which does not allow the strain to be greater on one part than on another, and the perfect fitting of the sections of the die so as to prevent the metal from wrinkling or buckling. These conditions are secured by delicately adjusted springs and many automatic attachments to control the action of the machine.

The metal must also be of the right degree of ductility for the drawing process. Cast iron is too hard

and must be made into wrought iron, which is soft and fibrous. Steel must be annealed. The metal is coated with a thin film of oil or grease while it is being worked.

The drawing of a deep shell is not accomplished by one stroke of the punch. There are sometimes five or six operations, the shell being drawn first on dies having outside blank holders and then on those having inside blank holders, each one having a smaller diameter than the one before.



From "Dies, Their Construction and Use," by courtesy of Norman W. Henley Publishing Co.

Figure 4. Operations in Drawing a Tube

Figure 4 shows how many steps are necessary in drawing a tube, and the Frontispiece shows several of the large number of operations performed in making such a simple article as a funnel. Eighteen additional operations are required after the twelfth stamping operation to finish the funnel.

The shells for the larger articles are made on drawing dies with as few seams as possible, so that the surface may be smooth and even.

Ears, handles, sprouts, etc., are electrically welded, so that the metal in the body of the article and that in the attachment unite as one.

Chapter III

ENAMELED WARE

Popularity

The enameled ware section is a large one. Enameled ware is unquestionably the most popular as well as *the* staple ware for household use on the market today. The chief reason is doubtless its reasonable price. It would be difficult to find a home in this country where it is not used, either as the whole equipment of the kitchen, or for some part of it. All varieties of utensils are made of it and it has largely replaced tinned ware.

Variety of Stock

The stock, consisting of white, blue, blue and white, and gray ware, includes:

1. For the stove:

Teakettles	Double boilers
Kettles for all uses	Asparagus boilers
Saucepans	Ham boilers
Tea- and coffee-pots	Frying pans
Steamers	

2. For the oven:
   - Bread, cake, and muffin pans
   - Pie plates
   - Pudding and other baking dishes
   - Meat roasters

3. For preparing and containing food:
   - Bowls
   - Cups and saucers
   - Spoons
   - Plates, platters
   - Pitchers
   - Boxes
   - Jars
   - Strainers
   - Colanders
   - Skimmers
   - Dippers, ladles
   - Funnels
   - Measures
   - Pails
   - Bread raisers
   - Milk pans

4. For the sink:
   - Dishpans
   - Draining pans
   - Soap dishes
   - Wash basins
   - Sink strainers

5. For miscellaneous uses:
   - Foot tubs
   - Dinner pails
   - Covered buckets
   - Cuspidors
   - Chamber pails

Composition of Enameled Ware

Enameled ware is sheet iron or steel coated with a glazed material which protects the iron from rusting. This coating is not actually united with the iron as in

the case of tinned ware (see Chapter IV), but is fused or " fired " on so that it will withstand ordinary usage.

The foundations are made by the methods described in the preceding chapter. The foundations must be firm and unbending or the enamel will chip off when the article is bent and expose the iron to action of rust. In time this action will undermine the entire covering.

Composition of Enamel

The hard, smooth coating of enamel is a form of glass, and like glass is composed chiefly of silica, or sand, combined with feldspar, potash, soda, borax, and some substance to produce the required color. The proportions vary in different manufactories and are carefully guarded trade secrets.

There is, however, one very striking difference between the ingredients of glass and those of enamel. Glass often contains substances, like arsenic, which are perfectly harmless so long as the article is not subjected to heat, but which would be poisonous in cooking utensils. Such materials are not used at all in enameled ware.

Preparation of Enamel

Just as in the manufacture of glass, the first step in the enamel-making is to prepare the " batch," which is simply the mixture of all the materials together.

It is very important that this mixture be of the right composition, for this determines whether:

1. The enamel will stick to the vessel properly.
2. The enamel will bake on with a smooth surface.
3. The surface will be non-porous.
4. The gloss will be lasting.
5. The color or mottling will be attractive.

When the batch has been thoroughly mixed it is emptied into a red-hot furnace, in which it is melted and becomes a thick, sirupy mass. While it is in this liquid form the furnace is tapped and the melted enamel is run out into water, which causes it to break up into small particles.

Grinding of Enamel

This breaking up is to facilitate the next process, grinding, as small bits are more easily pulverized than larger pieces. The grinding process takes place in large mills in which the enamel is mixed with clay and other substances. When it issues from the mill it is ready to be melted again and applied to the sheet iron or steel foundation.

Preparation of the Foundation for the Coating

The sheet iron or steel articles resulting from the drawing or stamping processes described above, have a black, scaly surface and must be cleaned and prepared

to receive the enamel coating. They are accordingly passed through an acid bath, which removes all foreign matter from their surfaces.

If the foundations should be examined at this point under a very strong magnifying glass, they would appear as though small bits of steel were projecting all over their surfaces. These catch and hold the enamel. When more than one coat of enamel is applied, as is the case with white ware, the enamel has a smooth, glassy surface to cling to instead of the rougher steel. Therefore it does not adhere so strongly and is much more liable to chip off than is the single-coated ware.

Application of Enamel to the Article

The article is then immersed in the enamel bath. Great care is taken to have the enamel evenly distributed by turning the article in many positions, so that all parts of it will be thoroughly covered; otherwise the coating would not be satisfactory. This seemingly simple operation requires skilled workers.

As said before, white ware is always coated more than once; the best variety has three coats. Any ware that is white inside or white all over is first given a ground coat and then two coats of enamel. The cheaper white ware has only one additional coat.

If a combination of colors, such as blue and white, or green and white, is desired, the article is given one

or more coats of one color and then while still wet the other color is applied, with the result that the two merge.

The articles are then dried thoroughly.

Fusing

The next step is known as fusing, a process which causes the firm adherence of the enamel to the article. The articles are placed in steel frames and run into muffle furnaces which are either red-hot or almost white-hot. The time required to cause perfect fusing varies from one to three or four minutes. The articles are then withdrawn and gradually cooled.

If the articles have only a single coat of enamel, they are now finished. When dipped twice, or three or four times, the fusing is repeated after every coat of enamel.

Finishing

In the case of pans or other such simple utensils, the articles are then inspected, labeled, and shipped. In the case of more complicated utensils, such as kettles, coffee-pots, etc., covers are fitted, and bails or handles attached.

Varieties of Enameled Ware

"Agate" ware is one trade name for the mottled ware, so named because it somewhat resembles the

mottled appearance of the agate. It is a specially durable variety of enameled ware.

" Granite " ware is another trade name for the gray mottled ware, so called because pulverized granite is actually added to the " batch," and also because its gray mottling somewhat resembles granite.

Care of Enameled Ware

With reasonable care enameled ware is durable, but there is one thing which must be guarded against in the very best of ware. The enamel must not be injured so that it cracks or chips off. Cracking can be produced in three ways:

By a heavy blow, which breaks the enamel by its force.

By the sudden application of excessive heat, which makes the underlying iron expand faster than the glazed coating and causes the enamel to crack.

By the sudden application of excessive cold to a very hot vessel, which causes a rapid contraction and subsequent cracking of the enamel.

The iron is then exposed at points where the enamel is broken, acids in the foods attack it, and gradually the whole enamel is undermined.

Unless this accident has occurred, housekeepers need have no fear of cooking acid food or any other food in

enameled ware utensils, because enamel is not attacked by any chemical substance except hydrofluoric acid, used for etching glass; this acid is not found in foods.

The hard, smooth, non-porous, non-scaly, glossy surface of enameled ware makes it very easy to keep clean and sanitary.

Any bad discoloration can be removed from enameled ware by soaking the utensil in washing soda and hot water.

History

Enameling as an art is of very ancient origin, and the process of applying beautifully colored enamels to gold jewelry has been practiced for centuries.

The application of the art to household utensils, however, was first practiced by the French, and then introduced into Sweden, Germany, and England. Its introduction into the United States is comparatively recent, but today domestic enameled ware occupies a leading place in the market.

As in all manufactures, improvements in making enameled ware have been rapid and many. The old process was very slow, as the enamel was applied with a brush, instead of by dipping. The fusing also took 15 to 25 minutes instead of 1 to 4 as at present.

The United States ranks first in the production of serviceable, durable enameled utensils, and ships large quantities to South America.

The foreign-made ware is higher in price, and usually has four coats of very hard enamel which firmly adheres to the base. Since the recent World War, however, little or none has been imported and American manufacturers are supplying the constant demand.

Summary of Selling Points of Enameled Ware

The conditions upon which the quality of enameled ware depend, and which the saleswoman must be ready to explain, are:

1. Preparation of steel foundation
2. Quality of material in enamel
3. Application of enamel
4. Firing

Chapter IV

TINNED, JAPANNED, AND GALVANIZED WARE

Definitions

Tinned, japanned, and galvanized wares are made of sheet iron or steel coated with another metal. Tinned ware is coated with tin; japanned is tinned ware painted with a special varnish; galvanized ware is coated with zinc.

Whenever iron or steel is coated with another metal, there is a surface union between the metals which is very different and very much stronger than the adherence of enamel. The metal coat will not scale off, though it may be scratched off. Tinned and galvanized ware are very durable.

Tinned Ware Stock

Tinned ware has continued to be popular in spite of the growth and widespread use of enameled and aluminum ware, as it is light to handle, inexpensive, and attractive when it is new. It also conducts the heat well, so there is less danger of scorching food.

Tinned ware stock includes many articles, especially those of smaller size, such as:

1. For cooking:
   - Tea and other kettles
   - Saucepans
   - Coffee-pots
   - Double boilers
   - Ladles, dippers
   - Steamers, poachers
   - Bread, cake, pie plates
   - Baking pans
2. For preparing food:
   - Apple corers
   - Graters
   - Biscuit cutters
   - Spoons
   - Bread and cake mixers
   - Lemon squeezers
   - Potato mashers
   - Colanders
   - Strainers, sieves, sifters
   - Funnels
   - Egg separators
   - Measures
3. For the sink:
   - Dishpans, draining pans
   - Wash basins
   - Soap dish and shakers
   - Wire pot cleaners
4. For the laundry:
   - Boilers

Manufacture of Tinned Ware

As tin will not adhere to the steel unless the surface is perfectly free from dirt, the steel is subjected to a long cleaning process.

It is first immersed in hot, dilute sulphuric acid and

then washed, heated, and passed through polished iron rollers to give it a well-polished surface; it is annealed again, immersed once more in dilute sulphuric acid, re-washed, and scoured with sand. At the end of this process the sheet is clean and bright.

Next, each sheet is put into a pot of melted tallow, where it is left until it is completely coated. After this the plates are plunged into a bath of melted tin, in which they remain from three to five minutes.

After cooling they are polished with bran.

The best tin plate is dipped twice; this is called "block tin," or "retinned ware."

The articles are drawn on dies or seamed from "blanks" by the methods described in Chapter II.

Care of Tinned Ware

Tinned ware must not be scratched so that the steel foundation becomes exposed. Rusting will surely follow. Therefore, metal spoons should not be used with a tinned utensil, or wire rings or other sharp metal scrapers for cleaning it. Hot soapy water should be used in washing it, or, if it is very dirty it may be boiled in a weak solution of washing soda. It may be polished with whiting.

Tinned ware should not be subjected to a high temperature such as that used in frying foods, or even placed on the stove to dry, because tin melts more easily than iron or aluminum.

Hot acids react on tin, therefore foods containing acids, as tomatoes, pineapples, etc., should not be cooked in tinned ware vessels.

History of Tinned Ware

The process of coating iron with tin, the oldest of all methods of metal coating, was first practiced in Bohemia, where tin was discovered in 1240, and for four hundred years Bohemia supplied England and Europe with tin-coated articles. The process was kept secret until 1620, when the Duke of Saxony obtained knowledge of the secret process and started the manufacture in his own country.

In view of the fact that England manufactured pig iron for hundreds of years it is strange that tin-plated ware was not made there until 1670. It was 1720 before a permanent plant was located and then the development was slow. After 1834 the growth was rapid, and by 1867 England exported over seven million dollars' worth.

In this country tinned ware was first manufactured from imported sheets at Berlin, Conn., by an Irishman named Patterson. The seamless ware was first called Frenchware, because it originated in France; previously, pieces had been soldered and seamed together. In this country Frenchware was manufactured first in New York. From then on the industry gradually developed, and by Civil War times there was a large de-

mand for kitchen spoons, and great quantities of tinned iron spoons were made.

The real growth of the industry in the country has been since 1890. By the McKinley tariff a high protective duty was imposed on imported tin plates to protect and encourage their manufacture in the United States.

Wire Goods

The wire goods are included with tinned ware because the largest part of the wire of which they are woven is tinned steel wire. The articles include:

1. For cooking and preparing food:
   - Broilers and toasters
   - Frying baskets
   - Strainers, sifters, and sieves
   - Egg beaters
   - Potato mashers
   - Cake coolers
2. For cleaning:
   - Soap shakers and soap dishes
   - Draining racks
   - Waste baskets
   - Carpet beaters

Wire Drawing

The process of making wire is known as wire draw-

ing. Rods of the metal pointed at one end are drawn through holes in steel plates. The rod is passed through holes successively smaller until the required size is reached. As the metal is being worked it gradually hardens and becomes less ductile, so that the wire must be annealed.

Brass wire may be made so fine that gauze may be woven of it containing 67,000 meshes in a square inch. Of course, no gauze so fine as this is found in the articles in the Housefurnishings Department, but many of the fine meshed sifters are made of brass wire. Another method of insuring fineness in such articles as tea strainers is to make them of two thicknesses of wire gauze.

In egg beaters and potato mashers, the steel wire is bent into the various shapes first and then tinned.

Japanned Ware

Such articles as:

Boxes and canisters for tea, coffee, sugar, spices, flour, bread, cake
Dust-pans
Trays
Crumb trays

which are not to be used for cooking are made of tinned ware covered with a hard coating of colored varnish, called japan, because the articles coated in this

way resemble the celebrated lacquered goods from Japan and China.

The colors seen are white, imitation of oak grain, blue, brown, and black.

Two or more coatings of the japan are given to the better grades. After each coating the articles are heated for 10 to 12 hours in an oven at from 135 to 165° F. The japanned surface is next rubbed with fine ground pumice, then with rottenstone, and sometimes finally polished by hand. Sometimes gold or bronze bands or floral decorations are added; these are painted on in a special gold size, then the gold leaf or bronze powder is dusted on, and the objects are again placed in the oven. On removal the gilt or bronzed portions have a protecting coat of varnish. The light colors require more careful heating than the darker ones.

Galvanized Iron

Galvanized iron cannot be used for articles in which food is to be contained as zinc forms poisonous compounds upon coming in contact with meat or vegetable acids. It is therefore used for articles which need a strong, non-rusting material, and which are not intended for use as food containers. Such are:

Water pails	Ash sifters
Dish drainers	Garbage pails
Ash cans	Refrigerator pans

Manufacture of Galvanized Iron

Zinc-plated ware is manufactured by two processes.

In the dipping process the sheet iron articles are first cleansed of any rust or dirt by immersing them in dilute sulphuric or hydrochloric acid. They are then washed in cold water, scoured with sand, and plunged into the zinc bath. If flat sheets are being coated they are passed through two iron rollers to smooth them. The thicker the sheets, the longer will be the time required to coat them, as it is necessary for the iron to attain the same temperature as the zinc before it will adhere well.

The electric process, otherwise known as "cold galvanizing," is growing more successful every year. It is far more satisfactory in coating sheets than in coating articles of irregular shape, as the electric current does not deposit the zinc evenly on such shapes. The advantage of the electrical process is that the toughness of the iron is not impaired by heating, as in the dipping process, and the coating adheres better.

See "Jewelry and Silverware Manual" for further information upon electroplating.

Care of Galvanized Ware

Only hot water and soap should be used in cleaning galvanized ware, as it is easily attacked by chemicals. Stains may be removed by rubbing with kerosene, followed by a thorough rinsing with hot water.

Chapter V

ALUMINUM WARE

Popularity

Aluminum probably makes a stronger appeal to the purchaser than any other ware in the Housefurnishings Department. Its attractiveness, lightness, and durability have been so widely advertised by the manufacturers that few housekeepers are unacquainted with its advantages. The salesperson therefore needs to be particularly well informed in regard to all its good points.

The stock includes utensils of the same sorts as those made of enameled ware, and in addition others, such as frying pans, which cannot safely be made of enameled ware, because of the extreme heat to which they are subjected. Fireless cooker receptacles are usually of aluminum.

Attractiveness

The bright, silvery appearance of aluminum ware makes a strong appeal to all purchasers. Aluminum, moreover, does not tarnish as silver does. A kitchen

in which many of the utensils are of this metal is decidedly attractive.

Lightness

Aluminum is one-third the weight of iron, one-fourth the weight of silver, and lighter than glass. Its lightness makes it especially suitable for such articles as large frying pans, double boilers, and roasters, which in cast iron are too heavy to be handled conveniently.

Durability

Aluminum is as strong as iron. In fact it is often used in the place of iron when strength and lightness are both required, as in air-ships. The remarkable durability of the metal assures the purchaser of an article of aluminum that it will last a lifetime. In addition to its inherent strength this metal has the advantage of being non-rusting. This quality means much in any cooking utensil.

Economy

The initial cost of aluminum is rather high. This is offset, however, by its durability, and by the economy in fuel which attends its use.

Aluminum ware requires less fuel, for it conducts heat readily. Heat is distributed through it twice as fast as through tin, and three times as fast as through

iron. It requires a large amount of heat at first, but when the article is once filled with heat very little is required to keep the contents of the aluminum kettle boiling. If gas is used, it should be turned down by one-third or one-half after the contents of the utensil have begun to boil. This is very different from iron or steel, where the heat collects in the center of the utensil. This characteristic of aluminum makes it a good warm-weather utensil.

Handles of aluminum utensils are quite often of tinned iron, steel, or wood, because aluminum ones become hot so quickly.

Furthermore, as aluminum is a good conductor of heat, food does not burn in aluminum utensils quickly: the heat distributes itself through the vessel instead of concentrating in one place.

In addition to conducting heat rapidly aluminum also holds heat longer than any other metal. This is a valuable property when food is to be kept warm. Coffee and tea will keep hot longer in aluminum pots than in other materials.

Aluminum is therefore the common material for fireless cooking. Food which has started to cook on the stove and has been transferred to the fireless cooker will retain the original heat for a long time. (For further information upon fireless cooking, see Chapter XVI.)

Occurrence of Aluminum

Aluminum is more abundant than iron, constituting 8 per cent of the earth's crust, but it is always found in combination — never as a free metal. Its most common form is in combination with oxygen in clay. In fact, aluminum is the basic metal of all clay. It is also found in nearly all rock. Even the beautiful precious stones, the ruby and the sapphire, are forms of aluminum in combination with other elements.

Processes of Obtaining Pure Aluminum

The first step in the process is to abstract the pure aluminum from the mixed form in which it occurs. The clay used is bauxite, which is found in both the United States and Europe. It was first discovered in Baux, France. Bauxite does not contain aluminum mixed with other substances, but alumina, which is the chemical combination of aluminum and oxygen. This alumina is separated from its impurities by chemical means, and then dried. It is now a pure white powder, resembling white sand. This part of the process is quite costly.

The next step is to secure the pure aluminum from this combination of aluminum and oxygen. This is done by electrolysis, a process which consists of decomposing a compound by passing an electric current through it. As it requires a large amount of electricity to produce aluminum, the manufacture is

usually located where water power is cheap. For this reason plants are located at Niagara Falls and Massena (on the St. Lawrence), in New York State.

The aluminum is turned out in the form of ingots or "pigs," a term taken from iron manufacturing. (See Chapter II.) From one ton of aluminum ore only one-half ton or less of alumina is obtained, and from this alumina one-fourth ton or less of "pig" aluminum.

Two Varieties of Aluminum Ware

The factory manufacturing the cooking utensils receives the aluminum in this form. The first step in the manufacture is the melting of the bars.

From here on, the process differs according to whether the articles are:

Cast, from liquid aluminum
Stamped, from sheet aluminum

Casting

The casting of aluminum ware is not different from the casting of iron. The melted aluminum is simply poured into a mold which is the shape of the desired article. The advantages of this process are that extra thickness can be given to the parts of the utensil where it is needed, such as the bottoms of kettles, etc., and also that many varieties of shapes and patterns are obtainable.

Stamping

The stamped or drawn aluminum articles are made by the process described in the latter part of Chapter II. Aluminum is susceptible of deeper drawing with less annealing than any of the other commercial metals.

Some stamped aluminum ware is "spun," that is, after the utensils are stamped they are placed on rapidly revolving chucks which are shaped to fit the inside of the article and the workman presses tools of various shapes against the outside. In utensils like coffee-pots or kettles, the top is turned in by the spinning process.

Stamped articles often have lengthwise wrinkles in the metal. These are removed by pressing an iron tool against the utensil as it revolves.

Attaching spouts to stamped articles, such as tea-kettles or coffee- or teapots, is an interesting operation. The spout and the body of the utensil are made separately, but a hole is left in the body where the spout is to be attached. Then the spout and the metal around the hole are heated, the two are brought together, and aluminum wire is used to make the article one continuous piece of aluminum.

Polishing and Finishing

Whether cast or stamped, the polishing and finishing processes are the same.

The first step in finishing the outside is to even the surface by grinding the whole to the depth of the deepest scratch. This is done by rapidly revolving buff wheels. Then softer wheels are brought against every part of the exterior and the well-known beautiful silvery polish results.

In finishing the inside surface there are several methods, each resulting in a separate "finish," as:

1. Polished, like the outside.
2. "Satin" or "scratch brush" finish, done by pressing the interior against a rapidly revolving fine wire brush.
3. "Line" finish, obtained by rubbing the interior surface with emery cloth.
4. "Dip" finish, a whitish finish, obtained by exposing the surface to an acid.
5. "Natural" finish — not finished at all, but left as it comes from the last manufacturing process.
6. "Electric" finish, a dark finish which is smoother than the others.

Care

Most manufacturers issue directions and suggestions for the care of aluminum utensils. They are not, as is often supposed, hard to keep in good condition.

The one point which all manufacturers emphasize is that caustic alkalies, such as lye, ammonia, strong washing powders or soaps containing alkalies, must not be used in cleaning the utensils. The reason for this is that these substances attack aluminum freely and dissolve portions of the metal every time they come in contact with it.

Any pure soap or metal polish that is not gritty will cleanse the polished surface.

The inside often becomes discolored after cooking foods containing iron, such as spinach; or if hard water is used. This is harmless, and can be easily removed by the use of cleaning powder. Persistent black coatings may be removed with steel wool. Coatings of burned grease may be removed by boiling the utensil about five minutes in a gallon of water to which three or four tablespoons of oxalic acid crystals have been added. Wash the utensil afterwards in plenty of soap and hot water.

Some people have the impression that aluminum is easily melted. The fact is that its melting point is 1215°, while water boils at 212°. Therefore, there is no danger that aluminum will melt in ordinary cooking operations, if water or moist food is contained in the vessel. But if the dish is allowed to remain over the fire without water it may melt.

Another wrong impression is that it is harmful to cook acid foods in aluminum utensils. Very careful

experiments have been made to discover the exact nature of the changes which take place when such foods are prepared, and it has been proved that there is no danger from the use of aluminum articles.

History

Considering the present popularity and the many advantages to be gained from using aluminum in the kitchen, it is a surprise to learn how recently it has come into use. The year 1855 was the first year of its commercial existence. It then sold at $90 a pound. By 1870, owing to discoveries in methods of extracting it by electricity from the substances with which it was combined, the price had declined to $12 a pound. In 1889 it was $2 and ten years later 29 cents.

Until it reached a level which brought it within reach of the ordinary consumer, it was not available for household use.

The United States Government buys large quantities of aluminum canteens, mess kettles, coffee boilers, stock pots, etc., for army use.

Summary of Selling Points

The selling points for aluminum ware may be summarized as follows:

1. Non-poisonous
2. Non-rusting
3. Does not scorch
4. Cooks quickly
5. Lightness
6. Durability
7. Economy of fuel

Chapter VI

WOODENWARE

Articles

The wooden articles in the Housefurnishings Department, in addition to furniture, are:

1. Utensils for preparing and containing food:
   - Rolling pins
   - Bread, meat, and cake boards
   - Chopping bowls
   - Spoons, forks
   - Salad sets
   - Nut bowls
   - Potato mashers
   - Butter paddles and molds
   - Buckets
   - Handles of various utensils
2. Laundry and cleaning implements:
   - Ironing boards
   - Wringers
   - Washboards
   - Clothes-pins
   - Pails

Tubs
Clothes horses
Curtain stretchers
Backs of brushes
Handles of brooms and brushes
Cases of carpet-sweepers

Character of Wood

More than fifty varieties of wood and 400,000,000 feet of lumber are used in this country each year in making articles of woodenware and novelties, a very large number of which are sold in this department.

The choice of the wood to be used depends on the purpose for which the article is intended. Some articles must be light, others stiff, others strong, others tough, others hard. The physical properties of wood vary with the species, the rate of growth, the locality, and the method of seasoning. Each one of these considerations has some definite effect on the final character of the wood.

The characteristics which must be considered are:

Hardness	Stiffness
Strength	Shrinkage
Toughness	Weight

Hardness

Hardness is a wood's resistance to wear. This is an important quality, and one most necessary for a

large number of household utensils. Chopping bowls and bread and meat boards must resist severe cutting blows; rolling pins must be hard.

The hard woods are oak, beech, birch, maple, walnut, ash, hickory, all of which belong to the broad leaf variety of trees. The soft woods are pine, spruce, hemlock, cedar, cypress, which belong to the "coniferous," or cone-bearing family. The hard woods are on an average two or three times as hard as the others, but some of the so-called hard woods are really quite soft, and vice versa.

The softer a wood is the easier it is to work, and therefore when there is no particular advantage to be gained by using a hard wood, a soft one is often substituted. For example, ironing boards, tubs, and other implements are often of soft woods, which are nevertheless hard enough for the purpose.

Strength

By strength is meant the ability of the wood to resist crushing, or pulling or breaking apart. This is another very important characteristic in selecting wood for such purposes as kitchen chairs. In general, hard woods are stronger than soft.

Toughness

By toughness is meant a wood's ability to bend without breaking. This characteristic is known as

resiliency, a most useful property, and especially desirable in handles.

The hard woods are about three times as tough as the soft. Among the hard woods the hickory is the toughest. This is the reason why hickory supplies the wood for more than two-fifths of all handles made. (See "Hickory," below.)

Among the soft woods pine is the toughest, and the alpine fir the least tough.

Stiffness

This characteristic is the resistance which a stick offers to a force which tends to change its shape.

Soft woods, in comparison with their weight, are stiffer than hard.

Shrinkage

By shrinkage is meant the amount of weight which a piece of wood loses in passing from the green to the dry condition. Newly cut, or "green" wood, is full of moisture; one-half, or sometimes more, of its weight is water, which is held in the walls of the cells and between the cells. A large proportion of this water must be removed before the timber is in shape to use, as green wood is likely to decay.

The process by which this moisture is removed is known as "seasoning." There are two general methods of doing this:

Natural drying — by air
Artificial or kiln drying

Natural drying is done at the saw mill. The sawed boards are piled in such a way that there is good circulation of air between them, and the pile sloped at the top so that the water will run off quickly. The length of the process depends upon the time of year, the weather, and the kind of lumber. In the dry climate of the southwest it takes only two months for pine to dry in summer, while in the damper climate of the Gulf coast cypress takes a year to dry. Lumber dried in the natural way contains from 15 to 30 per cent of moisture.

In the artificial process of kiln drying, the work is carefully regulated by principles which have been worked out, and the lumber is usually superior to the air-dried. The two processes are often combined.

Besides losing moisture and consequently weight, seasoned wood is different from green in other respects. It is stronger, stiffer, and harder, but not so tough. It is less liable to shrink in subsequent usage.

Among the soft woods, cedar and white pine shrink the least, spruce somewhat more, and long-leaf pine and tamarack the most.

Among the hard woods, locust, butternut, and black cherry shrink little, maple somewhat more, and white oak, hickory, and birch the most. The hard lumber

requires more care in seasoning to prevent warping and checking or cracking.

Lumber Used in Kitchen Utensils

As mentioned above, each species of lumber is particularly adapted to some certain purpose: some kinds for cabinet work and fininshing; others for use in foundation work. In the Housefurnishings Department, however, durability and serviceability, rather than appearance, are considered. In the following sections the woods commonly used are described.

Ash

Ash is a heavy, tough, elastic wood, with a coarse grain which shows up well in the finishing process. This makes ash a suitable wood for certain kinds of furniture, such as refrigerators or kitchen cabinets. The grain in lumber is produced by varying combinations of cells of different kinds. Spring wood and summer wood, sap wood and heart wood, slow growth and rapid growth, knots, and burls, all represent natural variations which are accentuated by the sawing and finishing processes which bring out the beautiful grains.

Basswood

Basswood is the lightest, softest, and weakest of the hardwoods. It is neither stiff nor strong, but because

of its even grain, white color, and ease of working it is very widely used. Twenty-three per cent of the total amount is used for boxes and crates.

Bread boards, butter paddles, ironing boards, washboards, and pails are made of basswood.

Beech

Beech is a moderately strong and heavy hard wood. Its wear-resisting qualities make it especially desirable for a large number of uses. Broom handles, clothespins, ironing boards, pails, refrigerators, washing machines, washboards, etc., are often made of beech.

Birch

There are thirty-five known varieties of birch, but the three principally used in woodenware are: paper or white birch, yellow birch, and red or cherry birch. The wood is close-grained, hard, tough, and takes a high polish. The yellow and red birches are heavy, of average stiffness and strength, and more than average toughness. Birch is used for clothes-pins, washboards, broom handles, and carpet-sweepers.

Cottonwood

Cottonwood is light, soft, of even grain, and easily worked, but tougher and stiffer than basswood. It wears well for a soft wood. About half of the cottonwood lumber is used for boxes, and most of the rest for ironing boards, washboards, baskets, etc.

Cypress

Cypress has been called "the wood eternal." It is one of the strongest and heaviest of soft woods. It resists moisture very well, and has accordingly always been largely used for shingles. This quality makes it desirable for ice-cream buckets, pails, tubs, wringers.

Hickory

There are a number of species of hickory. It is the strongest, toughest, and heaviest of the native woods. Its toughness makes it good for vehicles, and 60 per cent of the product is used for this purpose, while 31 per cent is used for handles.

Maple

There are four species of maple used in making wooden articles: the hard or sugar maple, red, soft or silver, and Oregon maples.

Hard maple is the most abundant and useful variety. It is of moderate weight, strong and hard, and has good wearing qualities. It is employed wherever strength and resistance are required, as in the case of chopping bowls, rolling pins, bread boards, carpet-sweepers, clothes-pins, pails, meat boards, etc.

Soft maple is lighter in weight, not so strong, stiff, or hard. It has an attractive grain, and is used for broom handles, butter bowls, ironing boards, etc.

Oak

There are more than fifty species of oak, but most of it is marketed under the general names of " white " or " red " oak.

Oak is heavy, hard, strong and tough, with a characteristic figure which makes it good finishing wood. It is widely used for refrigerator cases, kitchen cabinets, furniture and fixtures.

Pine

Pine is found in almost every forest region, and is as plentiful as oak. It furnishes one-half of the total lumber supply of the country. There are two large groups, the white and the yellow; and the properties are as marked as the species.

White pine is even-grained, soft, and easily worked, resembling spruce and cedar. It is used for kitchen cabinets, washing machines, pails, refrigerators, and most interior work.

Yellow pine is the heaviest, hardest, strongest, stiffest, and toughest of soft woods, and is in demand for general building purposes.

Poplar

Yellow poplar is a light, soft, fine-grained, easily worked, durable wood, much like basswood. It is used as a backing for veneer. It is a valuable wood

for washboards, carpet-sweepers, ironing boards, washing machines, etc.

Spruce

Spruce is a light-weight, soft, even-grained, easily worked, stiff, and strong wood. It is used for broom handles, butter tubs, inside partitions of refrigerators, ironing tables, and washboards.

Wood-Working

The lumber and wood-working industries are among the largest in the country. Thousands of workers are employed in the various stages of cutting the trees in the forests, transporting the logs to the saw mills, sawing them into boards, planing the rough boards, and making the finished articles.

Much of the material for woodenware goes to the factory in log form without passing through the saw mill.

Turning

Many of the wooden articles of the department, such as rolling pins, bowls, etc.— in fact, anything that is round or cylindrical — are made on turning lathes.

There are wide variations in the work and construction of turning lathes, but the principle is always the same, i.e, rough, round, octagonal, or square blocks of wood or other substances are fixed in place between

two rigid centers and revolved rapidly, while a chisel or other cutting tool is held against the block.

According to the method of operation, there are two kinds of lathes:

Foot lathes, operated by the workman.

Power lathes, operated by machinery and "power."

With respect to the species of work they do there are also two classes:

Center lathes, which form outside surfaces.

Spindle, mandrel, or chuck lathes, which perform hollow or inside work.

Both types of work, however, may be done on one lathe. There are many varieties of automatic attachments which assist in shaping the articles, and a skilful mechanic can obtain large varieties of shapes. Lathes are also used in shaping metal, bone, and ivory.

Finishing

For many of the simple articles in this department, the finishing process consists merely in sandpapering. This may be done by an endless belt on which sand or emery has been fixed.

Joints

When two pieces of wood are to be jointed together, as in cakeboards, buckets and pails, or furniture, many

methods are used, depending upon the material, the strength required, and the character of the work in hand. In former times all joints were made by hand, but now every kind can be made more accurately by machinery.

The three types of jointing are:

Straight-angle jointing
Edge-to-edge jointing
End-to-end jointing

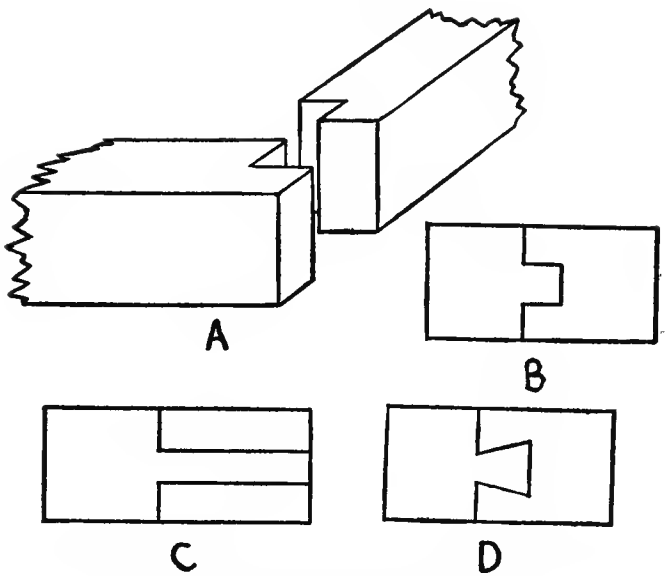
and each type can be effected in various ways.

The simplest method of joining two pieces of wood at right angles is by nailing or screwing. This serves for rough work, but is clumsy and not very strong.

A better way is by what is called the half-and-half joint, in which one-half the material at the end of each piece to be joined is cut away. (See Figure 5.) If carefully done this makes a serviceable and neat joint.

The mortice-and-tenon or tongue-and-groove joint is excellent where neatness and strength are required. It is used in straight-angle and edge-to-edge jointing also. This may be seen by looking at the end of a bread board where the small end pieces are joined to the body of the board. The protruding parts of one piece fit exactly into corresponding notches in the piece to which it is joined. (See Figure 5.)

Another very strong joint is known as the dovetail joint. In this type the projecting pieces of wood,



A — Half-and-Half Joint. B and C — Tenon or Tongue-and-Groove Joint. D — Dovetail Joint

Figure 5. Different Kinds of Joints

wider at the tips than at the base, fit into corresponding sockets. This is seen in bread and cake boards, but is not used so often as the mortice and tenon joint.

When an unusually strong, heavy joint is required, wooden pegs, called dowels, are driven tightly into auger or gimlet holes made in the joints. These dowels are of strong, hard woods, such as beech, maple, etc. Over 12,000,000 feet of lumber are used annually in dowel-making.

Gluing

Many pieces of woodenware are simply glued together. Good glue, if properly used, will unite two pieces of wood so closely that the fibers will part before the glue will break.

The secret of good gluing is to have the glue in perfect contact with the surface to be united. Dirt and air must be removed. A thin layer of air, different from ordinary atmosphere, clings to the surface of all bodies. This may be observed by dipping the wood into water, when air is seen adhering in the form of tiny bubbles. A single drop of glue adheres firmly if rubbed well onto wood.

The following rules regarding gluing will not only be of value to the salesperson in observing the construction of certain articles, but will also enable her to offer advice upon repairs.

1. Use as little glue as possible. If the two pieces of wood are separated by a large quantity of glue, the strength of the joint depends on the glue itself and not on the adhesion of the two surfaces.
2. Have the surface absolutely free from dirt, grease, old glue, or paint.
3. Spread the glue evenly, and use pressure in uniting the two pieces.

4. Keep the glue sweet. Glue is an animal product, made from the hoofs, bones, and tendons of cattle, and will deteriorate unless it is kept cool.
5. White glue, that is, ordinary glue bleached, is useful with white and light-colored woods.

Finishes

Many woodenware articles are natural-finished, that is, just smoothed. Others, such as sugar buckets, kitchen cabinets and refrigerators, are stained, and still others are painted.

The object of paints and stains is to preserve the wood by closing the pores or openings so as to prevent moisture and decay from entering. Paints and stains are often decorative.

Paint is opaque and conceals the natural appearance of the surface of the wood. It is more often used for exterior finishing.

Stains or varnishes bring out the natural grain appearance of the wood and are more decorative.

Stains

Stains vary with different woods. Porous woods, for instance, red oak, require the application of a filler before the stain is applied. Otherwise too much will be absorbed into the wood.

Stains are classified according to the liquid in which they are dissolved, as spirit stain, which is dissolved in alcohol, oil stain, and water stain.

Varnish

Varnish is a solution of certain gums or resin in alcohol and is applied after staining to preserve the stain and produce a shining, transparent surface. The number of coats of varnish depends on the fineness of the finish desired.

Paints

Paints are pigments, that is, coloring matter. The foundation is commonly white lead, or zinc oxide, which is ground and mixed with linseed oil or other liquids. Turpentine is added to make the paint more fluid; and driers, lead or manganese salts, are dissolved in the oil or turpentine to make it dry more rapidly.

The following rules regarding the application of paint will be of use:

1. The surface must be thoroughly clean and dry.
2. All old paint should be removed.
3. Nail holes, cracks, etc., must be filled with putty.
4. Knots or sappy places must be coated to prevent the sap's exuding and thereby causing blisters.
5. Thin coats well distributed are better than thick ones.
6. Allow ample time for drying between the coats.

Care of Woodenware

In caring for woodenware articles it is important to clean them immediately after they have been used for cooking operations. A chopping bowl is not only easier to clean if attended to as soon as one is through using it, but it is not so liable to absorb odors from the food contained. The following suggestions may be helpful in telling customers how to care for unfinished wood, varnished wood, and painted wood.

In cleaning *unfinished* wood:

To remove grease, the commonest stain, wet with cold water to prevent spreading, and scrub with strong washing soda.

To bleach when it has become darkened, apply a solution of oxalic acid (1 teaspoonful to a cup of hot water) to entire surface with a brush. Let dry, and scrub as usual.

To wash, go over surface with wet cloth, scrub with soap or fine sand soap, always with the grain, not across it or in circular motion. Rinse with clear warm water and wipe dry. Use as little water as possible; if much is used the wood becomes darker and water-soaked.

In cleaning *varnished* wood: dust, then clean with a soft cloth and oil. Polish with a dry cloth. Silk and chamois are good for finely finished woods.

In cleaning *painted* wood: use warm water and soap suds, applied with a cloth. Then rub over with a cloth wrung out of clear water, then with a dry cloth. If the surface is not dried it will be streaked. Spots which do not yield may be scoured with whiting. Never apply soap directly to paint.

Tubs or buckets which have become very dry are not water-tight and should have water put into them for some hours before using.

Woodenware will absorb odors and fats which will be conveyed to other foods. For this reason special wooden spoons should be kept for use with salads and not be used for cakes, custards, etc. Wooden buckets or containers, not being air-tight, are not suitable for cereals, which become filled with weevils unless kept in air-tight containers.

In general, woodenware for use in connection with food is limited to articles which can be made of nothing else. Usually they are articles which would be too heavy if made of any of the metals except aluminum, which would be prohibitive because of its cost.

Chapter VII

EARTHENWARE AND GLASSWARE

Varieties of Pottery

Some confusion exists regarding the different terms used in describing this class of ware. The words earthenware, crockery, porcelain, pottery, and china are used indiscriminately.

The term pottery is properly applied to anything made of clay and baked in a kiln. The word earthenware is often used for the inferior grades of pottery, distinguishing them from porcelain or china. Yellow earthenware is made of softer paste and fired at a lower temperature than the white ware. It is cheaper but less durable.

Crockery is earthenware of any grade, especially kitchen utensils, made from baked clay.

China or porcelain is vitreous ware, differing from earthenware in being more or less translucent, and in its superior whiteness and hardness.

Earthenware Articles

In this section of the department are found:

Baking dishes	Pitchers
Casseroles	Jugs
Ramekins	Jars
Bean pots	Bowls
Teapots	Nappies

Characteristics of the Ware

A feature which has made these articles popular for baking dishes is their quality of retaining heat. They are therefore useful when preparing foods which require a long, slow baking. Foods prepared in them keep warm longer than in metal dishes.

Another advantage is that food prepared in these dishes can be placed on the table in the same dish in which it is baked.

Pottery imparts no taste to food prepared in it, unless it is chipped or crackled.

Earthenware is not impervious to air, and therefore crackers, for instance, will become soft if kept in it.

Materials of Which It Is Made

The materials for pottery are very common, being clay, feldspar, and flint in varied proportions according to the article to be produced.

After the clay has been removed from the claybank it is allowed to age for some time. It is said that Chinese potters use the clay which their grandfathers have prepared, and that they in turn prepare clay for

their grandchildren. The modern process, however, continues for days, weeks, or months only.

Molding

The clay is first molded into the desired shape, either by hand or by machine, and then left to dry for some time.

Baking or Firing

When the articles are dry they are put into furnaces, called kilns, to be "fired." The better ware is packed in "saggers," or containers, made of fire clay, to protect them from stains, warping, and cracking. The common ware is often piled up in the oven of the kiln without covering.

The kiln is really a huge brick chimney with a floor. When the kiln has been filled with the ware it is bricked up and fires lighted underneath. These are low at first, but gradually become hotter until the degree of heat required for the kind of article being made is reached. Then the fires are checked and the kiln gradually cooled; usually about two days are allowed for this cooling. Then the kiln is opened and the ware removed. It is now in what is called the "biscuit" stage, rough, and without glaze.

After careful inspection the ware is smoothed and any lettering, stamping, decorations, or trade-marks are applied.

Glazing

The articles are next dipped into a glaze and allowed to dry, and then once more packed in " saggers " and fired. While the temperature is not so great this time as at the first firing, it is great enough to fuse the glaze with the body of the ware, so that the ware and glaze are one, not simply pottery with a coating of glaze.

The glaze on yellow ware and some other forms of crockery is fused on in the first firing.

History of Pottery

The baking of clay to form pottery ranks among the oldest arts. When ancient tombs are opened, or other traces of vanished civilizations are found, pieces of baked clay are almost always discovered.

Ancient Egypt was probably the first nation to develop this art, and there pieces of both glazed and unglazed pottery are found in a state of perfect preservation, but all the great nations of antiquity were proficient in pottery-making.

The Bible refers many times to pottery.

In medieval times both glazed and unglazed pottery were made as early as the twelfth century in Italy, and England doubtless learned the trade from European workmen. The English development of the art has been noted throughout the world for its beauty and superiority.

In America no pottery works were established before the end of the eighteenth century — about 1790; and until then the necessary supply had been imported from Europe. Rapid development has taken place in the manufacture of American-made ware, which now has a recognized standing in workmanship, design, and service. Purchasers find that American-made ware is always easily obtained and that they do not have to wait for shipments from Europe.

Glassware Articles

In this section are found:

Baking dishes	Fruit jars
Containers	Jelly tumblers
Measuring glasses	Lemon squeezers
Cream whippers	Rolling pins

Preparation of Glass

The manual for the " Glassware Department " gives a complete description of the process of glass-making, to which the reader is referred for information on this subject.

Fruit jars and jelly glasses, as well as containers, are made of bottle glass. They are often tinged with green, due to the presence of iron in the sand.

The glass baking dish, however, is of a different composition. Borax is used in its manufacture to give

it the power to withstand oven heat without cracking or melting. The borax produces a "low expansion glass," that is, one which does not expand much with heat.

Merits of Glassware

No other substance is as satisfactory as glass for preserve jars, etc. The requirement for these purposes is an air-tight receptacle, which is not affected by acids. Glass is ideal in both these respects. Hydrofluoric acid is the only acid which will affect glass and this is never present in any food.

The special glass baking dishes have the advantage of being very attractive, and food may be served directly from the dishes. They do not "crackle," nor absorb flavors, and are very easy to clean.

The transparency of glass makes it convenient for storing foods. One can see at a glance the amount and nature of the contents.

Chapter VIII

COMPARISON OF MATERIALS FOR COOKING UTENSILS

Essentials for Cooking Utensils

No one material is suitable for all cooking utensils. The purpose for which the article is to be used and the amount which the customer is willing to pay are important factors in determining the kind of ware to be recommended.

There are, however, four points which should always be considered in every purchase of this kind:

1. Safety from poisonous compounds.
2. The ease with which it is cleaned.
3. Economy in fuel.
4. Durability.

Safety

Safety for *all kinds of food* is found in:

Aluminum	Enameled ware
Glassware	Earthenware

Safety for foods *without acids* in:

Iron	Tinned ware

Copper receptacles may be used for boiling water, but not for cooking acid foods.

Aluminum has suffered many unjust criticisms based upon the false notion that it forms poisonous compounds when in contact with acids and certain foods. Exhaustive chemical experiments have disproved this entirely.

Teapots and preserving kettles for cooking acid vegetables and fruits should not be made of uncoated iron or of tinned ware.

Ease of Cleaning

The ease with which the various wares may be cleaned depends upon the smoothness of their surfaces. Food clings more readily to rough than to glazed surfaces. The easiest to clean are:

Glassware
Earthenware
Enameled ware

Earthenware, however, crackles. This is a disadvantage because food particles and flavors lodge in the tiny cracks and not only discolor the ware but flavor the food. This condition makes earthenware vessels unfit to use for cooking.

Iron ware is the most difficult to keep clean.

Economy of Fuel

The saving in fuel which may be made by using one

utensil rather than another depends upon the rate at which the material of which the utensil is made conducts the heat. In general, metals are good conductors of heat, but some conduct it faster than others.

Materials arranged in their order of conductivity of heat are as follows:

1. Silver
2. Copper
3. Gold
4. Aluminum
5. Brass
6. Tin
7. Iron
8. Porcelain
9. Glass (ordinary)
10. Water

This table shows why good kettles and boilers often have copper bottoms, and why aluminum is so successful as a cooking utensil. If three utensils made of copper, aluminum, and iron respectively are of the same size and thickness, the copper one will conduct seven times as much heat and the aluminum one four times as much as the iron one in the same time from the same fire.

Therefore, if it is desired to cook rapidly, as in jelly-making, when quick evaporation is desirable, it is more economical and satisfactory to use an aluminum utensil than an enameled one.

On the other hand, if a long, slow cooking at a low temperature is desired, as in casserole cooking, porcelain or glass, which are poor conductors of heat, are better than aluminum. The aluminum ware conducts

the heat so rapidly that the flavors are lacking which would have been brought out by slower baking. Moreover, when glass or earthenware dishes are once thoroughly heated, they transfer a constant steady volume of heat to their contents for a number of hours, even after the fire has been turned off.

Because of the greater conductivity of heat in aluminum, sugar, milk, rice, and other easily scorched foods may be prepared in an aluminum utensil with less danger of burning than in one of iron or enameled ware.

It is necessary also to consider the melting point of the various metals in connection with the cooking operations in which they are to be used.

Iron melts at 3279° F.
Copper melts at 2000° F.
Aluminum melts at 1215° F.
Tin melts at 442° F.

Tin, therefore, is not suitable for the highest temperature, such as that necessary for frying. Iron or aluminum can stand this temperature without danger.

Durability

The durability of cooking utensils depends largely upon whether they will break or otherwise disintegrate.

Aluminum is undoubtedly the most durable, since it neither melts nor rusts.

Iron will not melt at cooking temperatures, but will rust unless properly cared for.

Tinned ware melts at comparatively low temperatures, and rusts if the tin is scratched off.

The enamel coating of enameled ware will crack off.

Woodenware warps and cracks when water is allowed to stand in it.

Earthenware and glassware are easily cracked by sudden blows and falls. Earthenware crackles under high temperatures.

Neither earthenware nor glassware is suitable for cooking on the top of the stove, where heat is applied to one part of the utensil only, and thus expands it unevenly. In the oven the heat is more nearly uniform.

Part II —Cooking and Cleaning Implements

Chapter IX

UTENSILS FOR COOKING

Knowledge of the Elements of Cookery Essential

In order to understand the merits of different shapes and styles of cooking utensils and to be able to advise customers upon purchases, the saleswoman should be familiar with the fundamental principles of cookery.

According to the cooking purposes for which they are used, there are utensils for:

Broiling, roasting, baking; in which heat is applied by means of heated surfaces.

Boiling, braising, stewing, steaming; in which heat is applied by means of water.

Frying, sautéing; in which heat is applied by means of fat.

Broiling

The simplest method of cooking meat is by roasting or broiling before a fire. This can be done out of

doors with no utensil at all except a pointed stick on which the meat is spitted. In an ordinary kitchen only thin cuts of meat are cooked in this way. In hotels and restaurants fowls and larger cuts are roasted in the same way by means of tin kitchens.

This method when applied to slices of bread is known as toasting.

Utensils for Broiling

True broiling is the subjection of food to the direct heat of a fire without the use of water, fat, or a heated surface.

The utensils used in broiling are:

Wire broilers or toasters
Wire racks set on feet over a pan

The simple, hinged, double wire broilers, made of heavy tinned wire, or sometimes of steel wire, are used over a wood or coal fire; the meat or fish is held over the fire, which must be red hot to prevent coal gas from getting into the meat, and any fat or moisture in it allowed to fall into the flame. Broiling above the fire causes frequent jets of flame whenever the fat falls upon the coals and this sears or burns the surface. Many people prefer meat which has been charred in this way. These broilers are often called gridirons.

The same style of wire toasters are used for toasting

bread over the coals. These are usually lighter weight than the broilers.

When gas or electricity is used in cooking meats the fat must not be allowed to fall on the fire. The food is therefore suspended in front of the flame or placed beneath it, and the fat is caught in a pan known as a dripping pan. Baking pans of Russia iron or enameled ware are the best for this purpose.

When bread is to be toasted over a gas, gasoline, or oil flame, a four-sided toaster, upon which slices of bread stand upright, is excellent. This construction distributes the heat evenly and produces a uniformly browned toast. By regulating the heat one can obtain a crisp toast with a moist center, or a thoroughly dry toast.

Electric toasters are a specialty and are used on the table.

A process known as pan broiling is done in a hot, dry pan. The effect is very different from true broiling, as the fat and juices of the meat ooze out and half fry it. The utensils used for this method are frying pans or skillets, which are discussed later in the chapter.

Roasting and Baking

Roasting and baking are ordinarily done in an oven by means of heat radiated from its four sides; the oven is heated by a fire box. For meats the process is

known as roasting; for vegetables, fruits, and batter foods, as baking.

Roasting

Roasting is the best method of preparing large cuts of meat as it preserves the juices and develops a fine flavor. The object is to form the hardened outer layer immediately. Meats need a very hot oven at first, and therefore the utensils are of materials like iron, which will stand high temperatures well.

Utensils for Roasting

The utensils used for roasting in an oven are:

Roasting pans
Self-basting roasters

Roasting pans are made of Russia iron or enameled ware, and may be provided with a wire rack upon which to set the meat. They should be fairly heavy, for a thin pan is apt to buckle and cause the water used in basting the roast to collect at one end while the other smokes. The wire racks may be used for cake coolers also.

Self-basting roasters are very popular. They are made of enameled ware or aluminum, and provided with a tight-fitting cover. The steam rising from the meat condenses on the cover and falls back over the meat and bastes it. Cheap cuts can be made tender in

these roasters. The round and oval-shaped ones are more easily cleaned than the square-cornered ones.

In selling large roasting pans of either type, it is well to ask the customer the measurements of her oven. People do not carry an accurate mental picture of sizes and the pan selected may be too large and have to be exchanged.

Tin kitchens are used in hotels to roast or broil without an oven. The meat is put on a revolving spit and slowly turned before the open flame. This method is much used in Europe. The flavor developed is very fine.

Baking

Foods consisting of a mixture of flour or meal, with a liquid and some "raising" material, such as eggs, yeast, baking powder, or soda, may be in the form of:

Dough (biscuits, bread, pie crust)
Thick batter (muffins, cakes)
Thin batter (popovers, waffles, pancakes)

The lightness of foods made from batter depends upon the amount of gas or air enclosed. This is derived from the eggs, yeast, baking powder, or soda enclosed by beating. Heat causes the gas to escape and as the bubbles rise the food rises with it. The moisture contained in the food is changed into steam and the food becomes dry.

Utensils for Baking

The utensils used for baking are:

Baking pans	Angel-cake or tubed pans
Bread pans	Pudding dishes
Pie plates	Patty pans
Layer-cake pans	Bean pots
Loaf-cake pans	Casseroles
Muffin pans	Ramekins

Bread pans are made of Russia iron, aluminum, tinned ware, enameled ware, or glass. Those which have the top edge wired are stronger. If the bottom is slightly rounded they are not so difficult to keep clean. They are usually sold in sets of two or three. They may also be used as loaf-cake pans.

Double bread pans are provided with a cover which catches, and the pans thus entirely enclose the loaf. These are made of sheet steel and of tinned ware.

Pie plates, usually plain, but sometimes scalloped for fancy pastry, vary in depth from very shallow to deep. The average size is 10 inches in diameter. They are made of enameled ware, tinned ware, aluminum, glass, or earthenware. Those of enameled ware have been found especially good for baking juicy pies.

Layer-cake pans are shallow pans, either round, square, or oblong with straighter sides than pie plates. They are made of tinned or enameled ware. The

lighter weight of tinned ware is preferable to other materials for cake-making, because the heavier materials retain too much heat and cause the cake to burn easily.

The very shallow styles are often called jelly-cake pans, because these cakes must be thin to roll well.

Some layer-cake pans have removable bottoms, so that the cake may be taken from the pans with less danger of crumbling.

Loaf-cake pans are rather deep pans made of tinned ware, enameled ware, aluminum, or glass. They are round, square, oval, or oblong, plain or scalloped. Oblong loaves of cake can sometimes be cut to better advantage in serving, but many cooks maintain that it is more difficult to obtain a well-baked oblong loaf than a round or square one, where the "pull" between the batter and the sides of the pan is equally strong at all points. Loaf-cake pans should be used for pound cake.

Muffin pans come in groups of six, eight, nine, or twelve cups on a frame. The cups are plain or scalloped and vary in size. They are sometimes sold separately and unmounted. They are made of cast iron, aluminum, enameled, and tinned ware. The cast iron ones are often long and trough-shaped instead of cup-shaped. These pans are used for small cakes and popovers also. The size of the family usually determines the number of cups, but often when other food is being cooked in the oven at the same time two six-cup pans

will be found more convenient to arrange than one twelve-cup pan.

Pans of a special shape are made for baking lady fingers.

Angel-cake or *tubed-cake* pans are deep, round, plain or scalloped pans with tubes in the center through which the heat of the oven rises and expands the air bubbles in the batter at the middle of the cake. They produce a very level, evenly baked cake, because the heat reaches the center of the cake as soon as any other part and because the " pull " between the metal and the batter is more even than in any other style of pan.

Pudding pans or *baking pans* come in various sizes and depths, both oval and round. They are made of tinned ware, aluminum, enameled ware, and glass.

Patty pans, for baking fancy cakes, or for use as molds, are made in a great variety of shapes, round, oval and fancy, of tinned, enameled, or aluminum ware.

Casseroles are unsurpassed for baking various kinds of food to be served from the cooking dish. They are made of earthenware in brown, blue, green or yellow; vitrified china, glass, or aluminum. Glass is very attractive and may be used for baking either bread or cake. Earthenware is the most popular material. Aluminum ones are attractive, but it is impossible to cook slowly in them.

The requirements of all casseroles are that they have

a tight-fitting cover for long cooking in a slow oven, and that the material does not crack or craze. If the surface glaze is broken, food lodges in the tiny cracks and the casserole is no longer fit to use.

Pottery, glass, or china casseroles, before they are used for the first time, should be soaked in cold water and then boiled. This toughens and hardens them. The risk of breakage declines with use. They should not be placed on the stove or in the oven without having water or fat in them. They should not be placed in cold water, or on cold surfaces, such as a wet sink, while hot, because they are likely to crack.

Boiling .

Boiling is perhaps the simplest process of cooking vegetables and is an excellent way of cooking meat. The food is put into boiling water (water boils at 212° F.) and kept there until cooked.

Vegetables, especially potatoes, and green vegetables, need actively boiling water, else they are apt to become water-soaked.

Meat, on the other hand, should have little real boiling. Meat is largely protein, or albumin, a class of food distinguished from starches, fats, and mineral substances. This protein is coagulated, i.e., hardened or made firm, by heat. Real boiling over-coagulates the protein and makes it indigestible, but simmering at a lower temperature softens the fibers. In cooking

meat, therefore, it should be boiled rapidly at first for about five minutes to coagulate the albumin on the surface and to make a water-proof casing to hold the juices in the meat. The rest of the process should be at a moderate heat. Salted meats, such as ham or corned beef, should be soaked first to remove the excess salt.

Soup-making is quite different, however. The process must extract as much juice as possible from the meat. The meat is therefore cut into small pieces, covered with cold water, and brought gradually to a slowly boiling temperature.

Stewing

The stewing process for cooking meats is intermediate between boiling and soup-making. Its success depends on a thorough coagulation of the outside of the meat and a slow finishing cooking. The temperature should never exceed 180° F. The meat should be cut into small pieces, thrown into a kettle containing a small amount of hot fat, and cooked until the surface is thoroughly coagulated. A thickening of flour mixed with water is added, and the whole brought to a boil. It is then allowed to simmer for several hours. This is an economical method of preparing cheap cuts, which become tender and digestible in the process.

Utensils for Boiling and Stewing

The utensils used for boiling and stewing are:

Teakettles	Coffee-pots
Kettles of all kinds	Coffee percolators
Saucepans	Teapots
Stewpans	

Teakettles are used only for boiling water. They usually have a wide base. However, a deep, pot-shaped style is sometimes sold for use on a coal range, where the kettle may fit down into the stove hole. As they are usually rather heavy when full, the handle is in the shape of a bail which distributes the weight evenly. The bail is usually protected at its central part where the hand comes, by a wooden cylindrical covering, since wood does not conduct heat so rapidly as metal. Sometimes coiled wire is used for this central section, as heat takes longer to pass through the coils than through a straight piece of metal and thus becomes lost.

The spout is curved to prevent the water from splashing when it is boiling and is placed at the bottom of the kettle to insure easy pouring.

The covers are small, as no foods are cooked in these kettles, and the water can be poured in through a small opening. They should be large enough, however, to admit of cleaning.

Double boiler insets are provided with some teaket-

tles. This is a fuel-saving device, as water can be boiled in the lower part while food is cooked above.

Teakettles are made of aluminum, enameled ware, cast iron, nickel-plated copper, and tinned ware. Those of tinned ware often have copper bottoms, because copper conducts the heat so rapidly. In sizes teakettles range from four to seven quarts. Six quarts is the size for the average family.

Kettles or *pots* for other uses are known under a great many names. They come in a variety of sizes and shapes and are made of enameled ware, aluminum, tinned ware, and cast iron. The cast iron and tinned ware ones should not be used for cooking acid foods.

Preserving kettle is the name applied to the deep, wide-topped, bailed shapes. They are usually lipped on one or both sides. A projecting ear on the side opposite the lip is a convenience in steadying the kettle when pouring from it. Preserve kettles usually come without covers, though separate ones may be easily fitted to them.

Berlin kettles are those with rounded rather than straight or flaring sides. These also have bail handles in the large sizes, but the smaller ones often have ear handles on opposite sides. These kettles usually have covers.

Windsor kettles are those with straight flaring sides. They usually come with covers.

Soup kettles, stock pots, or *stove pots* are various names given to large straight-sided kettles used for cooking large quantities of any kind of food. They are usually covered.

Fish kettles are long, narrow, deep, covered kettles for boiling fish whole.

Ham boilers are oval, large, deep, covered kettles for boiling a ham whole.

Asparagus boilers, also called *corn boilers,* are oblong and deep and hold bunches of asparagus or ears of corn to better advantage than a round-shaped kettle.

Saucepans and *stewpans* are made of tinned ware, enameled ware, or aluminum, have a projecting handle, a lip for pouring on one or both sides, straight, flaring, or rounded sides, and may be covered or uncovered. They come in a number of sizes ranging from one to five quarts. They are used for cooking small amounts of foods such as gravies, sauces, or vegetables. Many cooks like them for mixing cakes and batters, as they are lighter than crockery or earthenware and the handle is convenient to help hold the utensil when creaming butter.

Wide, shallow, tightly covered saucepans should be used for cooking foods needing a small amount of water; deep, uncovered ones for strong-juiced vegetables like cabbage which require a large amount of water. For candy-making, aluminum pans are good,

because the heat is conducted so fast that the sugar rarely scorches and also because the smooth inside surface makes it easy to keep the sides wiped free from sugar crystals.

Berlin saucepans are similar in shape to Berlin kettles, and Windsor saucepans to Windsor kettles, except that they have the projecting handles instead of bail handles.

Double or *triple saucepans* consist of sets of two or three covered pans so shaped as to fit over one burner or hole in a stove. They are a fuel-saving device, as two or three kinds of food may be cooked with one blaze.

Covers of aluminum, enameled, or tinned ware are sold separately for use with kettles or saucepans which are not provided with them, or to replace old ones. They come in several sizes ranging from about 8 to 11 inches in diameter. Sets of assorted sizes in wire racks are also sold. In fitting covers to pans the measurement should be taken inside the flange of the cover, not from rim to rim.

Ladles and *dippers* are long-handled bowl- or cup-shaped utensils used for dipping up and pouring liquids. As dippers are used principally for dipping water, for example in the laundry, and the ladles for foods, as preserves, soups, etc., the ladles are smaller, and hold about a cupful. It is important that the handles be

strong and that the length be adapted to their use. Both dippers and ladles are made of tinned and enameled ware.

Coffee-pots are made in three styles:

Pots for boiling
Drip pots, or biggins
Percolators

The pots in which coffee is boiled are deep, holding from 1 to 4 quarts; larger sizes are sometimes called coffee boilers. The spout, which often has a strainer on the inside, is stubby and placed at the top of the pot so that the grounds will not get into it during the boiling process. This style of pot should be sold to those who drink substitutes for coffee, since these require hard boiling. These pots are made of enameled ware, tinned ware, aluminum, and nickel-plated copper.

In the drip pots or in the biggins the pulverized coffee is put into a bag or receptacle in the top of the pot and hot water poured through it. This arrangement originated in France.

The percolator is a later invention upon the same principle. Finely ground coffee is placed in a receptacle at the top. A tube leads from the bottom of the pot up through this receptacle. When the water is sufficiently hot it rises through the tube, strikes the cover, spreads over the coffee, and percolates through it.

Coffee owes its refreshing properties to the presence of three substances:

Caffeine, 1 to two per cent
Volatile oils (the aroma), a trace
Caffeo-tannic and caffeic acids

These substances are extracted by boiling. When coffee is prepared by the drip or percolator method the hot water takes up the volatile oils, which produce the delicious aroma of coffee, and the caffeine; and the bitter acids — the most injurious ingredients, which attack the lining of the stomach — are left in the grounds.

Percolators are very decorative utensils and are often sold in other departments than the Housefurnishings Department. They are made of enameled ware, aluminum, nickel, silver, or copper, and are designed for use with coal, gas, alcohol, or electricity. Their bases are sometimes wide and flat, sometimes narrow and curved and their handles are of wood or porcelain; wood is a poorer conductor of heat than porcelain. Pieces of horn or ivory are sometimes inserted between the metal and the wood in the handle, as these materials are extremely poor conductors of heat.

Glass tops of percolators are also sold separately.

Teapots are here grouped with boiling utensils, though tea should never be boiled. Boiling extracts

the thein and the tannin contained in tea, and these substances affect the nerves.

Teapots are made of china, earthenware, aluminum, enameled ware, or silver. Many are fitted with removable tea-balls, or tea chambers, in which the tea is placed, and these are removed when the desired strength has been extracted. Separate tea balls of aluminum are also sold in this department.

The spouts of teapots are longer than those of coffee pots and fitted on the lower part of the pot. They also have a strainer on the inside. Pots range in size from 1 to 3 quarts.

Braising

The process of braising meats is half way between boiling and baking. The meat is first partially browned and then cooked in a moist heat in a tightly covered pan or pot in the oven. At the end of the process the cover is removed and the stock reduced to serve as a sauce. This is an economical method of preparing meat, as all the meat juice is retained in the meat and gravy. Cheap cuts can thus be made very palatable.

Utensils for Braising

The utensils used for braising are:

Dutch ovens
Casseroles
Self-basting roasters

Dutch ovens are cast iron bailed kettles with a tightly fitting cover. They are very good for braising purposes because they are suitable for cooking on the top of the stove, as well as in the oven.

Casseroles and self-basting pans have been discussed earlier in the chapter.

Steaming

In steam cooking steam passes over the food and cooks it at a temperature of 212° F. All the soluble juices are retained instead of being lost as in boiling. Steamed foods therefore are highly flavored. Meats are usually better when boiled. Many vegetables and puddings are excellent when steamed.

Utensils for Steaming

Utensils for steaming require two compartments, one for the boiling water, the other fitted over this for the food. The utensils used in steam-cooking are:

Steam cookers
Steamers
Poachers
Double boilers

Steam cookers are rather large, oven-shaped cabinets, provided with a copper water tank at the base and with shelves above, on which the food is cooked. Many varieties of food may be placed in such a cooker at one time.

Steamers consist of a perforated food chamber fitting over a kettle-shaped vessel. The perforated part may be used as a colander or strainer, thus doing the work of two utensils.

Poachers are a special variety of steamer used for preparing poached eggs. As the process is a brief one, the pan is very shallow and broad to provide a wide heating surface. A perforated removable rack holds 3 or 5 small-handled, shallow cups, each large enough to contain an egg. A tightly fitting cover goes over all. An advantage of poachers is that none of the white of the egg is wasted as in poaching in hot water when particles of it are lost.

Double boilers, which are also known as *milk boilers* or *rice boilers,* are not really boilers at all, as the food does not come in contact with water or steam, but is in a dry heat. The outer vessel holding water keeps the food at a constant temperature. This vessel may be of tin, enameled ware, or aluminum. Tinned ware often has a copper bottom. The inner vessel is usually of the same material, but sometimes inner vessels of enameled ware are found with tin outer vessels.

Double boilers are very good for cooking cereals, custards, and creams, as the food juices and mineral matter lost in direct cooking are thus preserved.

Frying

Deep fat frying is cooking by immersing food in hot

fat at a temperature of 350° to 380° F. It is used for cooking small cuts of meat, vegetables, and made dishes, such as croquettes. The fat must be hot enough to form an impenetrable layer upon the surface, otherwise the grease soaks in and an indigestible food is the result. When croquettes or vegetables are cooked in this way they are often dipped in beaten egg and bread crumbs, because the albumin of the egg coagulates at once and protects the food.

Sautéing

Sautéing is the process of cooking meats, like liver, in a small amount of fat in a shallow pan. The utensil must be able to withstand high temperatures well. A thick pan is better than a thin one because the fat will not burn so easily.

Fats

The fats and oils used most frequently for deep fat frying are:

Oil (olive, cottonseed, or a mixture of both)
Lard
Butter
Beef or mutton fat
Bacon dripping

Olive oil can be heated to 608° before it will burn. Lard burns at 392° and butter at 266°. Butter is

therefore a poor material for frying and olive oil is the best. A combination of butter and lard, or lard and mutton fat is used by many people who do not like the taste of oil.

The nature of the food to be fried must be taken into consideration. Cold or watery articles lower the temperature of the fat very quickly, and therefore only a small amount should be fried at one time and the fat should be allowed to heat again before another "batch" is put in.

Utensils for Frying and Sautéing

The utensils used for frying in deep fat are:

Frying kettles
Frying baskets

Utensils used for frying in a pan or sautéing are:

Frying pans
Spiders

The utensils in which frying is done must be deep enough to allow the food to be entirely submerged in the fat, and must be capable of withstanding great heat — the highest temperature used in any cooking operation. Iron and steel ware are especially desirable for this purpose. (See Chapter II.)

Frying kettles are usually made of iron or steel, sometimes of enameled ware. When a frying basket

is to be used with them they are deep and straight-sided, so that the basket may be lowered into them. The food should be entirely covered by the fat even when the kettle is two-thirds full. These frying kettles are often provided with supports from which the basket hangs while draining. The larger sized kettles have bail handles, the smaller ones straight handles.

Frying baskets are made of woven wire or perforated metal.

Frying pans, skillets, and *spiders* are different names given to the shallow, handled pans used for frying and sautéing foods. The length of the handle varies; some styles have lips on one side, others on two sides. They are made of enameled ware, aluminum, cast iron, and steel. The inside surfaces of the two latter styles are often nickel-plated. The "spider" originally had long legs to keep it from the flames of the open fire, whence its name.

Steak or *chop covers,* high, round or oval tinned ware covers, may be used for covering frying pans when pan-broiling meat, especially the cheaper cuts. If the meat is cooked a long time in a pan partly filled with water and the pan is kept tightly covered, the meat will be as tender as the roasts which are cooked in the self-basting roasters.

Griddles are flat disks, either round or oval, of aluminum, soapstone, enameled ware, or iron, used on the top of the stove or over stove holes for cooking pan-

cakes and other flat batter cakes. Sometimes they have bails, and sometimes a projecting handle or ear handles. The soapstone ones are unequaled when once "seasoned," but they require long service to become so. Aluminum and soapstone griddles can be used without greasing. The cast iron ones are sometimes nickel-plated.

Cake turners are flat tinned ware, enameled ware, or aluminum squares with long handles, for turning pancakes on the griddle.

Waffle irons are also used on the top of the stove. They consist of two parts: hinged halves of iron or aluminum which contain the waffles, and a base which holds the halves together. The surface of the irons, which may be either circular or square in shape, is usually indented to raise a pattern on the waffles and to give a greater heating surface; a deep pattern gives a better radiating surface than a low one.

It is necessary in cooking waffles to have an even distribution of heat and the base concentrates the heat at one point, from which it spreads evenly over the whole surface of the iron. For gas ranges the base is higher than for coal, as the gas flame is more intense. The higher style also allows the waffle mold to be turned without lifting it from the base. This is an advantage with heavy irons.

Omelet pans are made in two parts and hinged in the middle. The sides are perpendicular so that when

the pan is closed one half fits exactly over the other. An equal amount of the mixture or batter is placed in each side, and when the omelet is half done the pan is closed and the double omelet is on one side. These pans are also used for preparing hashed brown potatoes and other dishes.

Chapter X

IMPLEMENTS FOR MIXING AND PREPARING FOOD

Stock

Many and various utensils are used in preparing food both for cooking and for serving. The saleswoman needs to be particularly well informed upon this stock, for it is here that newly patented goods are constantly appearing, especially among the smaller contrivances.

In spite of the variety of stock, however, these implements may be classed according to use, as implements for:

Chopping, cutting, grinding
Stirring, beating, pressing, rolling
Straining, separating
Measuring
Containing

Implements for Chopping, Cutting, Grinding

To this class belong:

Food choppers or grinders
Chopping knives and trays
Coffee mills
Cutlery

Graters	Biscuit, doughnut, and cooky cutters
Can openers	
Apple corers	Slicers

Food choppers and *meat grinders* are of heavy, substantial tinned iron. The principle upon which they are operated is known as the screw motion, which is used whenever it is necessary to produce great pressure. The food is fed into a cylinder through which a spiral rod — the feed screw — advances when the handle to which it is attached is turned. The feed screw carries the food to the cutting ends and forces it against sharp knifelike edges with openings between, through which it falls into a receptacle. The screw carries all the food to the cutters and leaves the barrel empty.

The degree of fineness with which the food is cut depends upon the distance apart of the cutting edges. If they are close together the food will be finely cut; if far apart, coarsely cut. Three sizes are usually provided with the chopper, fine, medium, and coarse. Sometimes an extremely fine cutter, called a nut butter cutter, is also added. A chopper should cut rather than squeeze the food apart.

Choppers and grinders have long handles, which give greater power than short ones.

Grinders come in three sizes. The largest size, which will chop two or three pounds of meat a minute,

is too large for ordinary family use, and the medium and small sizes are those generally sold.

Grinders should be washed with hot water and soap immediately after use.

Chopping knives and *bowls* produce the same results but with more labor and time, as half the time and strength are wasted in raising the knife. However, the old-fashioned method is preferred by those who wish to preserve all the juices of meat or fruit. The bowls are made of basswood, cottonwood, and maple, turned out on lathes, and often sold in nests (one inside another). Some bowls are oblong in shape. Bowls should be cleaned as soon as used, and water should not be allowed to stand in them as it will warp and crack them.

Coffee mills are of two styles. One style is a square, wooden, boxlike mill with an opening in the top of the grinder for putting in the coffee. These have a drawer at the bottom into which the ground coffee falls.

The other style has a container, usually of glass, though sometimes of wood and glass, for storing the coffee and feeding it between the cutting knives. The cover must fit tightly to preserve the aroma of the coffee. The receptacle into which the ground coffee falls is sometimes marked with a graduated measuring scale.

In both styles of grinders the cutting knives may be

regulated to produce pulverized coffee for drip coffee pots, medium fine for percolators, and coarse for boilers.

Cutlery consisting of paring knives, boning knives, meat cleavers, and bread and cake knives, is described in another manual.

Can openers are of many styles and there are few satisfactory ones. It is essential that they make a clean cut, be strong, and easily operated. The cutting edge is of sharpened steel; the handles of wood or steel.

Graters come in many sizes. They are of tinned ware with sharp toothlike projections. A small one is less wasteful of food than a large one. Combination graters, round or four-sided, have coarse, medium, and fine graters all in one grater. Box graters are used for nutmeg.

Biscuit cutters are round, sharp, tin cutters. *Doughnut cutters* have a small, round cutter fastened in the center of the larger one to cut a hole in the center of the doughnut; this provides a larger surface of the doughnut to be exposed to the fat. *Cooky cutters* come in a variety of fancy shapes.

Vegetable slicers are fluted, hard wood, adjustable cutters for slicing vegetables, fruits, etc.

Implements for Stirring, Beating, Pressing, Rolling

To this class belong such implements as:

Mixing spoons
Bread mixers
Cake mixers
Egg beaters
Mayonnaise beaters
Cream whippers
Lemon squeezers
Potato mashers
Fruit presses
Bread, meat, and cake boards
Rolling pins
Butter paddles and molds

Mixing spoons are made of enameled, aluminum, iron, steel, and tinned ware and of hard wood. Enameled ones must be heavy or the enamel will chip off. They are good for all purposes, but in time the enamel will wear off the edges.

Iron spoons are especially adapted to heavy use, but should not be used for stirring acid fruits or vegetables.

Aluminum spoons are light for beating and stirring, but are not comfortable to use with hot foods, because aluminum conducts the heat so rapidly that the handles become hot.

Wooden spoons are excellent for beating and stirring batter, because of their lightness, noiselessness, and long handles. Some styles are slit, like a fork, which allows the batter to run through and makes the work more efficient. Wooden spoons have also the advantage of not discoloring the hand. They will not scratch metal. Because of their extreme lightness, however, they are not so good for use with heavy materials as are the heavier spoons. Those which are used for

salads should not be used with custards or other foods that absorb odors readily, because wood holds and carries odors.

Bread mixers are large, tinned ware buckets, provided with a tightly fitting cover, and having a bent rod operated by a handle. When the handle turns the bent rod kneads the dough, so that it is unnecessary to touch it with the hands. The mixer is clamped to a table to hold it firm. This device makes simple the difficult task of bread-making.

Cake mixers are similar to bread mixers, except that they are provided with beating fliers instead of kneading rods, and thus mix and beat a cake quickly.

Egg beaters are of three varieties:

Simple wire whisks: spoon, balloon, or spiral-shaped
Dover beaters
Those having glass containers

Whites of eggs may be beaten to a froth because of the texture of the white, which stretches and encloses air. Each style of beater produces a different texture.

The simple wire whisks make the airiest texture because they enclose the largest amount of air. They are therefore especially desirable for making meringues and angel or sponge cakes.

The Dover egg beater, which may also be used for whipping cream, and making mayonnaise dressing, is

composed of wire blades attached to two small, cogged wheels. These cogs fit the cogs of a larger wheel turned by a handle. One revolution of the large wheel gives five revolutions of the small, and consequently five revolutions of the blades. This is known as the " wheel and axle " construction.

The Dover beater is especially good for all-round use, as it works very quickly. It gives a fine close texture because it is not lifted from the mixture while it is operating and therefore beats in less air than the other type.

The beaters provided with glass containers are of two varieties. One kind is very like the Dover beater, except that the whips are balloon-shaped wire ones; the other style, which is used for whipping cream, has a dasher which works up and down. The advantage of having a covered container is that the eggs or cream do not spatter; the receptacle also serves as a measuring glass.

The cogs of an egg beater should never be wet as wetting washes out the oil and makes the beater hard to work.

Mayonnaise beaters are essentially the same as egg beaters, except that they have a reservoir for holding the olive oil and regulating its flow into the beater, and also have a container for the mayonnaise.

Lemon squeezers are of two varieties. In one style, which is especially good for rapid work, the lemon, cut

in half, is placed in a cup-shaped receptacle to which a long handle is attached and a duplicate is pressed against it. The juice runs through holes in the implement. These are generally of heavy tinned iron which may be used safely with the acid lemon juice, because the juice is not heated and also does not remain long in contact with the metal. They are also made of wood, porcelain, or aluminum.

The other variety is of glass with a domelike projection having knobs on it, on which the half lemon is pressed and rubbed. The juice either collects in a trough at the base or runs through slots into a receptacle. This variety does not extract the oil from the lemon peel as does the other style of squeezer.

Potato mashers are of two general styles. In the so-called ricer the potato is pressed through small perforations in the masher — which may be cylindrical or wedge-shaped — by a smooth plate operated by a handle. The potato so mashed appears like grains of rice. This style produces a drier potato than the old-fashioned variety, which is of wood or twisted wire fastened to a handle and is simply pressed down on the potato.

Fruit presses are similar to potato mashers and are used for making grape juice, and for pressing juice from fruits for jellies, etc.

Bread, meat, and *cake boards* are made of hard wood, such as poplar, maple, cottonwood, white cedar,

birch. The white poplar is said to be entirely odorless. They come in sizes 12 x 14, 14 x 20, 15 x 22, 18 x 24, 19 x 28, 20 x 30.

Rolling pins are made of hard wood — usually of maple — china or glass. The glass ones may be filled with cracked ice and are used for pastry.

Butter paddles and *molds* are of hard wood, such as ash, birch, beech, or maple, with corrugated surfaces for rolling butter into balls or rolls.

Implements for Straining and Separating

These include:

Colanders	Funnels
Strainers	Flour sifters
Egg separators	

Colanders are perforated utensils made of aluminum, tinned ware, or enameled ware, or woven wire, for straining soups, vegetables, etc. They have ear handles.

Strainers are smaller than colanders and used for straining gravies, tea, etc. They are made entirely of woven wire, or of tinned or enameled ware with either woven wire or perforated bottoms.

Both colanders and strainers set over a kettle make excellent steamers.

Sifters are used for dry materials such as flour or meal. Flour sifters usually have cranks, operated at

the side or through the handle, which revolve blades inside the sifter so as to break up lumpy meal and hasten the sifting process. They are of tinned ware, with wire bottoms.

Funnels are in the shape of an inverted cone, fastened to a tube. They are used for filling bottles or other narrow-mouthed receptacles. Funnels with wide mouths are used with fruit cans.

Egg separators are used in separating the yolk from the white of raw eggs. They are small, flat, round implements of either aluminum or tinned ware, with a slot through which the white of the egg slips and a cuplike depression which holds the yolk.

Implements for Measuring

There are two methods of measuring: by quantity, that is by the quart, pint, spoonful, etc.; and by weight, that is, by pounds, ounces. Measuring by quantity is the method most used in household cooking.

Quart or *pint measures* are made of tinned ware or of glass, and are plain or lipped. They are marked to measure half pints, and sometimes ounces and pounds as well. A kitchen should be provided with two measures, one for dry and one for liquid materials.

Measuring cups hold half a pint, and are divided into quarters, halves, and thirds. They are made of tinned ware, aluminum, or glass.

Measuring spoons come in one-quarter, one-half,

one teaspoon, dessert-spoon, and table-spoon sizes. "Nests" of one-quarter, one-half, and one teaspoon often come fastened together for convenience. Measuring spoons are of aluminum or tinned ware.

Scales are either spring or balance scales. Spring scales are the kind sold for ordinary household use. At the top is a flat pan upon which the article to be weighed is placed. This pan rests upon a coiled wire spring, which is contained in the iron box beneath. A pointer connected with the spring operates over a dial which may be either upright or tilted backwards. The contraction and expansion of the spring with the weight of the article on the pan cause the pointer to move. Some of these scales are provided with tinned scoops; others have an extra "tare" hand which gives the weight of the container separately from the article. Although spring scales are satisfactory enough for household use, they are not accurate enough for trade use, because the force of the spring varies, contracting and expanding with changes in the temperature.

There is a variation of the spring scale on which the article to be weighed is hung from a hook attached to the end of the coiled spring. The spring moves a pointer over an indicator.

For accurate weighing platform scales are used. In this style a small known weight at one end of a beam is made to balance a heavy unknown weight at the other end, on the lever principle.

Tables of Weights and Measures

The saleswoman will often find it to her advantage to know some other rules of weight and measure in addition to the common:

4 gills	= 1 pint
2 pints	= 1 quart
4 quarts	= 1 gallon
16 ounces	= 1 pound

and the following may be of use:

4 teaspoons liquid	= 1 tablespoon
4 tablespoons liquid	= ½ gill or ¼ cup
1 tablespoon liquid	= ½ ounce
1 pint liquid	= 1 pound
2 gills liquid	= 1 cup, or ½ pint
1 kitchen cup	= ½ pint
1 heaping quart sifted flour	= 1 pound
4 cups flour	= 1 quart or 1 pound
1 rounded tablespoon	= 1 ounce
3 cups corn meal	= 1 pound
1½ pints corn meal	= 1 pound
1 cup butter	= ½ pound
1 tablespoon butter	= 1 ounce
2 cups granulated sugar	= 1 pound
1 pint granulated sugar	= 1 pound
1 pint brown sugar	= 13 ounces
2½ cups powdered sugar	= 1 pound
Butter size of an egg	= 2 ounces
Butter size of a walnut	= 1 ounce
10 eggs	= about 1 pound

Measurements should be taken level.

Utensils for Containing Food

The vessels used for containing food are:

Bowls	Boxes
Jars	Cans
Cups	Bread raisers
Pitchers	Molds
Plates	

Bowls come in a great variety of sizes, made of earthenware, tinned ware, enameled ware, and wood. They are both plain and lipped.

Jars are of earthenware or glass. The crockery ones, usually blue and white, are used for containing many kinds of food. They are attractive and help to carry out a color scheme. The glass ones have the advantage of being transparent so that the contents may be noted at a glance. These can be labeled with black paint, shellacked over afterwards. Paper labels will wear well also if shellacked over.

Jelly glasses are either plain or have a fluted inner surface to produce a fancy effect when the jelly is turned out. They are provided with tightly fitting tin covers.

Preserve cans are of three varieties:

1. Screw top, in which the top is either of tin with a lining of porcelain, or with a tin screw and glass top which screws down over the jar.

2. The kind having a glass top which is held in place by a simple wire spring.
3. Self-sealing jars in which no rubber is required.

In the first two styles rubber rings are used to make air-tight joints. Black rubber is more durable than white; but red rubber is best. Only thick, strong, elastic "live" rubber ones should be used, as the poor ones shrink, crack, and let in the air.

The principle of preserving is the prevention of microscopic plants or bacteria which are the cause of the decay of all foods. Heat destroys the bacteria in the food and sealing prevents the entrance of others.

Cups, pitchers, and *plates* are used for holding left-over foods, etc. The heavier, less expensive grades of china or earthenware are used (see manual for "Chinaware Department"), and also enameled ware and glass. As these articles are for utility only, they should be plain and substantial. Pitchers should be wide-mouthed to admit of easy cleaning, and should have a lip that pours well.

Bread and *cake boxes* are made of japanned ware. Some have roll tops, others are plain square or oblong boxes, while others are like small cupboards with shelves, the door opening out in front. They have ventilating holes to prevent the contents from molding.

"Tin storage receptacles are good for keeping

cookies and cake, but stone crocks are better for bread.

"The difference lies in the fact that the process of growing stale is a different one in each case. Cookies turn stale by absorbing moisture from outside; therefore they require that that moisture be kept away. The impervious tin cake box does this, especially if a few pieces of charcoal are placed in the box to absorb what little moisture may accumulate.

"Bread grows stale by the shifting of its own moisture from crumb to crust. A fresh loaf has a crisp crust and a soft crumb, while in a stale loaf the reverse is true. In a tin box, especially if it be unventilated, this moisture, held in the crust, soon makes a musty loaf. In a stone crock, which is porous, the moisture has a chance to escape, the crust becomes less soggy, and the flavor of the loaf is better maintained. In cake, where there is less difference in texture between the outside and the inside of the loaf, staleness consists in a gradual general loss of moisture. Cake is therefore better kept in tin, with the addition of a receptacle containing water, to be daily renewed. If cake and bread be stored in the same box, the cake will take up moisture (and incidentally a bready flavor) from the bread and remain moist longer, while the bread will dry faster than when stored by itself." [1]

1 From Farm House Series No. 5, Cornell Reading Courses, "Choice and Care of Utensils," by Ida S. Harrington.

Spice, flour, sugar, coffee, tea, dredge, pepper, and *salt boxes* are made of japanned ware. Some flour containers have sifters attached. Flour, cereal, and salt boxes are also made of earthenware.

Wooden *buckets* of varying sizes are sold for sugar, flour, meal, rice, tapioca, crackers, barley. They are not suitable for cereals, however, because they are not air-tight.

Bread raisers are large vessels of either tinned or enameled ware, with ventilated covers, into which bread dough is put to be raised.

Chapter XI

CLEANING IMPLEMENTS

Articles

In this section belong:

Brooms
Brushes
Mops
Dusters and cleaning cloths
Beaters
Carpet-sweepers
Dust-pans
Scouring and polishing materials

Garbage cans, pails, ash cans, etc., are also included in this chapter.

All the articles are simple in construction, and generally inexpensive.

Brooms

There are several kinds of brooms: floor, ceiling, children's, and whisk brooms. All of these are made of broom corn, a canelike grass of India, cultivated in the middle west of the United States for this purpose alone. Kansas and Oklahoma supply the largest crop;

Illinois the best. The plant somewhat resembles ordinary maize. The top part of the stalk and head are used for brooms. There are many grades of this corn. Some of them are known to the manufacturers as:

Green hurl corn
Green self-working
Medium quality hurl
Medium quality self-working
Sound good common
Dwarf corn for whisks
Common red tipped insides and covers
Stained and damaged

The handles of the floor brooms are of hard wood, chiefly maple, birch, and beech. They are turned out on lathes, and then smoothed in a "sander," a machine which revolves the handle in contact with a belt which polishes it. A great many handles are given no further finishing. Others are stained and varnished or painted.

The handles of whisk brooms are usually rough wood, covered with the corn. For fancy handles, bone, celluloid, or silver is used.

The process of making brooms is very simple and a large number are still made by hand, especially in prisons and penitentiaries. The largest broom factory in the world is in Amsterdam, N. Y.

The corn is sorted into equal lengths, bleached, and

dried. It is then placed around the end of the stick and fastened by wire in a winding machine. The broom is conical at this stage, and must be flattened in a vise. It is then sewed by hand, or by power, with stout twine, usually flax twine which was formerly imported from Europe, but is now made in the United States.

The broom is then run through a scraping machine to remove any seed left on the corn, after which it is trimmed and the plush or velvet guards are placed over the wiring. This is omitted in the cheaper grades. The brooms are then labeled and bunched in dozens for shipment.

Customers will appreciate being told that new brooms should be soaked in hot salt water. This toughens the corn. Brooms should always be hung up, not allowed to stand on the floor, as this ruins their shape. They will last longer if washed in hot soapy water frequently. This keeps them soft and pliable. The wires at the top should not be wet, as they will rust and break.

Brushes

Brushes are used for two general purposes: (1) to apply something, paint for example, and (2) to remove dirt. As each variety is suited to some particular service, their number is almost unlimited. Some of them are:

1. Brushes for cleaning and polishing wood:
   - Scrubbing brushes
   - Floorsweeping brushes
   - Floorwaxing brushes
   - Dust-pan brushes
   - Dusting brushes
   - Balustrade brushes
   - Window and blind brushes
2. Brushes for cleaning porcelain and glass:
   - Bath tub brushes
   - Sanitary brushes
   - Hearth brushes
   - Window brushes
   - Bottle brushes
3. Brushes for cleaning metal surfaces:
   - Scouring brushes
   - Silver cleaning brushes
   - Stove cleaning brushes
   - Radiator or spring brushes
4. Brushes for furniture and clothing:
   - Stair carpet brushes
   - Furniture brushes
   - Mud and spot brushes
   - Shoe brushes
   - Doilie brushes
   - Whisk brooms
   - Crumb brushes
5. Brushes for food:
   - Pastry brushes
   - Vegetable brushes

Chapter XVI of the manual for the "Leather Goods Department" describes methods of making brushes, materials used, and tests for distinguishing them. Coarser fibers, which are not injured by water, are used for brushes of the Housefurnishings Department. These are:

Tampico (a tropical South American plant)
Rice root
Coir (the husk of the cocoanut)
Palmyra (an East Indian Palm)
Cocoa fiber
Piassava (a coarse fiber from the inner stalk of a palm)
Bass
Bassine
Kittool
Union fiber (a mixture)

There is a wide range in the quality of the woods used in the backs because of the varying quality of the brushes. The backs of scrub brushes are chiefly made of birch, beech, and maple.

The brush-making industry centers in Pennsylvania. Ohio, New York, Maryland, and Maine are also large producers. About 13,000,000 feet of wood are used annually for this purpose alone.

Brushes should always be dried with the bristles down, not with the back down; otherwise the water is allowed to soak into the back, which loosens the set, and cracks the wood.

When brushes are used in connection with food, as for greasing pans, it is desirable that the "set" be of such a nature that the brush may be sterilized without injury.

Mops

Floor mops are of two general kinds:

Wet mops for use with water in washing floors
Dry mops for polishing hard wood floors

Both varieties are made of waste cotton yarn which is soft and absorbent.

Wet mops are often provided with self-wringing devices. The handles are usually made of plain hard wood, because they are so often in contact with strong soapy water which would injure better finishes.

Dry mops are of two varieties, the plain mop and the mop which is permeated with an oil or a chemical which holds the dust and polishes the floor. The advantage of the latter is that the dust is not scattered through the house. Mops may be washed and reoiled with a special oil sold for the purpose.

The frame, to which the handle is attached, may be round, triangular, or heart-shaped to reach into corners. Some styles have rubber tips on the ends to prevent marring furniture.

When the handles are adjustable the mop can reach under furniture and it also stays flat on the floor. The handles of these dry mops are often stained by the use of logwood, copperas, or nut galls, to look like the black wood, ebony, or are enameled with japan.

Mop wringers are made to fit upon pails for use in wringing floor mops. Some pails are made with spe-

cially fitted attachments for the purpose. These save labor.

Cleaning Cloths

These include dish, scrubbing, dusting, and polishing cloths.

Dusting cloths, treated with a chemical to hold the dust so as not to scatter it around, are known as "dustless" dusters. Feather dusters are also sold.

Chamois for washing windows are made of sheepskin. (See manual for the "Leather Goods Department" for a description of the preparation of chamois.)

Dust-Pans

These receptacles for holding dust and dirt are usually of japanned ware, sometimes of galvanized ware. The style which has a hood-shaped top is better than the open style, as the top prevents the dust from flying up as it is swept into the pan. Dust-pans now come with long handles, so that the person using them does not have to stoop over. The better grades have a firm steel edge, so that the pan will lie flat on the floor.

Carpet-Sweepers

Carpet-sweepers are a combination of mechanical broom and dust-pan. They consist of:

A revolving brush
A wooden dust-pan
A long handle

The small rubber-covered wheels rest in ball-bearing sockets and in the better-quality sweepers they are covered with a protecting metal case. These wheels, which project far enough from the dust-pan to rest on the carpet, are attached to the revolving brush. When the sweeper is pushed along the wheels rotate the brush, which brushes the dust into the closed pan.

The wooden cases or pans are made of many different kinds of wood, the most common being maple, birch, and oak. Mahogany veneer is also used. Two million "board feet" [1] of lumber are used annually in this industry alone.

A woven braid band usually encircles the case to prevent the sweeper from marring furniture.

Carpet-sweepers scatter less dust than brooms.

Carpet-Beaters

Carpet-beaters are made of rattan or wire and consist of a flat, racquet-shaped top fixed to a handle.

Scouring, Cleaning, and Polishing Materials

Many different powders and pastes are sold in the

1 "Board foot is the common unit of measure for logs and lumber in the United States. A board foot is the contents of a board one foot square and one inch thick.

Housefurnishings Department for cleaning and polishing metals and other substances.

Metals tarnish because they are acted upon by both air and water. Abrasion, or rubbing, with a material harder than the tarnish itself, will remove it. The essentials of any good polishing powder therefore are:

1. That it be harder than the layer of corroded or tarnished matter.
2. That the particles be so fine that they will not scratch the metal.

The cleaning powders best adapted to different metals are as follows, for:

Iron and wood — white sand
Steel knives — Bath or Bristol brick
Copper, brass, and tin — tripoli, or rottenstone
Silver, aluminum, and tin — whiting

White sand is the polishing material in most scouring soaps and powders. It is a very cheap and pure sand made by crushing quartz, sandstone, or other rock to fine powder. It is also made into solid scouring bricks, known as Bath or Bristol bricks. It should not be used on gold or silver, as it is too coarse.

Tripoli, rottenstone, electro-silicon, and *diatomaceous earth* are various names for an earth made up of the widely distributed glassy skeletons of microscopic plants, which are nearly as hard as sand, and yet are so fine grained that they do not scratch metals.

Whiting is finely powdered English chalk. The chalk is sifted through muslin and floated in water; the heavy particles sink, and the fine part which floats is used for the whiting. This is the basis of nearly all silver polishes. It can be used mixed with ammonia. When mixed with oil and an acid it forms a paste or liquid, which is excellent for cleaning brass and copper, but should not be used on silver.

Sand soap is a mixture of fine clay, alkali, and fat.

Stove blacking is graphite (a form of carbon) mixed with molasses or other sticky substances.

Electrical silver cleaners are special devices for cleaning silver, consisting of an aluminum plate which is put into boiling water in which baking soda or salt are dissolved. The chemical reaction which takes place reduces the tarnish [1] to a pure metallic silver. Experiments have shown that cleaning by rubbing with an abrasive material removes 25 times as much silver as the electrolytic method. This electrical method of cleaning silver does not leave the silver with a high polish, and if this is desired it may be secured by rubbing. The method is suitable for both sterling and plated silver.

Silver-plated ware should not be scoured or rubbed hard, as the plating is softer than ordinary sterling sil-

1 Tarnish is a black substance formed when silver comes in contact with sulphur compounds which are present in air, water, gas, in many foods, especially eggs, and also in rubber and wool.

ver and wears away more easily. (See manual for "Silverware Department.")

If silverware is lacquered no abrasive substance should be used in cleaning it, as this will wear away the lacquer and expose the silver.

Steel wool is used for polishing metals in the same way as sand or emery. It consists of sharp-edged threads of steel which curl up like wool or excelsior. It should not be used on soft metals, as it will scratch them.

Furniture polishes have various oils as a base. The formulas are usually kept secret by the manufacturers.

Pails and Buckets

Water pails, scrub pails, fire pails, and coal hods are made of galvanized iron, enameled ware, wood, or fiber (see "laundry tubs" in Chapter XII). They vary in size, holding from 6 to 14 quarts.

Ash Cans

Ash cans are always made of heavy galvanized ware. Some are made with hard wood staves, others with steel ribs. Some are reinforced with iron braces around the center. Many are corrugated.

Ash cans are usually either 24 or 26 inches in height, and in diameter vary from 15 to 18 inches.

Garbage Cans

These are made of galvanized ware and of enameled ware. The covers should be tight fitting to prevent cats and dogs from ravaging the contents, as well as for sanitary reasons. There are patent devices for this purpose. The cans come in many sizes, holding 4, 6, 8, and 10 gallons.

Oil Cans

Cans for holding kerosene oil may be small with long spouts for filling lamps, etc., or in larger sizes for storage purposes. The former are usually of tinned ware, the latter either of tinned or galvanized ware.

Miscellaneous Accessories

Bedroom accessories, consisting of wash bowls and pitchers, chambers, slop pails, candle sticks, toilet stands; and a few bathroom accessories, as foot tubs and baby baths, are sold in this section also. These are made of galvanized, enameled, tinned, and japanned ware.

Chapter XII

LAUNDRY EQUIPMENT

Divisions

Equipment for the laundry falls into two general classes:

Articles for washing clothes
Articles for ironing clothes

To understand the merits of the appliances for laundry work, the saleswoman must also understand the principles of laundering. For this information the reader is referred to Chapter XXVI of the manual for the " Cotton and Linen Departments."

Washboards or Rubbing Boards

The corrugated boards upon which clothes are rubbed to remove the dirt are of three varieties:

Glass-covered
Zinc- or brass-covered
All wood

The cheapest and least desirable boards are all wood. The wood is apt to splinter and become rough from the friction of use.

The zinc-covered ones are very satisfactory for ordinary hard use. Zinc does not rust. These are made with both single and double rubbing surfaces.

The glass-covered boards are very satisfactory as they cannot rust nor develop sharp edges to tear the clothes, although they have the disadvantage of being easily broken. They must be protected from sudden changes of temperature.

In all the boards the corrugations should be rounded rather than angular, as sharp edges wear the clothes. On the better boards the top projects enough to protect the clothing of the user from the splashing of the water.

The woods used for the backs and frames of the best boards are cottonwood, basswood, and spruce. (See Chapter VI.)

Boards come in several sizes.

Laundry Tubs

Portable laundry tubs are of three varieties:

Wood
Galvanized iron
Fiber

Wooden ones are made of woods which stand water well, such as pine, cypress, or hemlock. (See Chapter VI.) They are constructed of narrow upright staves fitted into a straight bottom and held tightly together

by iron hoops. They must be kept damp else they will shrink and leak, but water should not be allowed to stand in them, as the best of wood will warp and split under such conditions.

Galvanized steel tubs are very satisfactory, as they do not rust and are light. The heavier ones are provided with an attachment for holding the wringer.

Fiber tubs are made of wood pulp molded into shape and finished with a high luster. They are light, convenient to handle, and because of their smoothness, easy to keep clean. They will not leak nor fall apart because they are made in one piece.

Tubs are of many sizes. The 12 to 15 gallon tubs are the medium family sizes. These tubs are large enough to prevent splashing. At least two tubs are required for washing clothes.

Clothes Washers

Tin cones with long wooden handles are used by many to accelerate washing. When forced up and down in the tub they remove dirt by suction.

Wringers

Clothes wringers are machines for wringing clothes dry. They consist of rubber-covered rollers, adjusted by screws and operated by a crank. The frames are of maple.

The springs which control the rollers and the gears

are usually hidden in the casing to prevent the clothes and the fingers from being caught. The springs may be either coiled wire, one such spring at either side, or an arched steel pressure spring reaching from side to side and controlled by a cross bar of wood. This style distributes the pressure very evenly over the rollers. In the best wringers the gears are ball-bearing.

All metal parts must be heavily galvanized to prevent rusting. The greater the diameter of the rollers, the greater the pressure they can exert and the drier they will wring. It is good economy to purchase a first-class wringer, and one as large as possible; 16 or 18 inch rollers will wring a good-sized blanket when it is doubled lengthwise twice.

The life of a wringer is greatly prolonged by good care. The screws which tighten the rubber cylinders should be loosened after use to remove the pressure from the rubber. A weak solution of ammonia will preserve the rubber. Grease should never be allowed to come in contact with the rollers. The cogs may be cleaned with kerosene and then oiled with a good machine oil.

Not all styles of wringers can be used on round tubs, and the salesperson should ascertain which kind of tub the customer has.

Wringers save work for the worker. They also are less hard on the clothes than hand-wringing.

Boilers

Clothes boilers are made of

Copper
Tinned iron
Tinned iron with copper bottoms
Galvanized iron

Copper is an excellent conductor of heat, and therefore boilers of copper are very satisfactory. They are expensive, however. Those made of tin with copper bottoms have an advantage over those which are wholly of tin. The coating of tin must be heavy as otherwise it wears off and the iron base will be exposed and rust the clothes.

The better quality of boilers are double-seamed to prevent leaking and have wire around the top for additional strength. Wooden handles are cooler than metal ones.

Boilers are usually oval, as this shape fits better on the stove.

The 10 or 12 gallon size is a good one for family use.

Some boilers have faucets, which are a convenience in drawing off the water.

Clothes lifters for lifting the clothes from the boilers are plain, smooth, hard wood sticks with galvanized prongs.

Clothes Baskets and Hampers

(See Chapter XVIII.)

Clothes Lines

There are three kinds of clothes lines:

Cotton
Hemp
Galvanized iron

The cotton lines are both braided and twisted. For a description of the process of braiding see Chapter IX in the manual for the "Notion Department." Cotton lines are very strong and do not stretch, kink, or ravel. The clothes-pins hold firmly on them also.

The hemp lines do not injure the clothes, as they yield easily to the pressure of the pins.

Galvanized lines are permanent, and will not sag nor rust the clothes.

Lines come in 50, 75, and 100 foot lengths, and all are one-fourth inch in diameter.

Clothes-pins

There are two varieties of pins, the common kind and the spring kind which is patented. The latter are, of course, more expensive.

The woods used for pins are beech, basswood, maple, and sometimes birch, elm, and ash. The clothes-pin industry is a by-product of the wood-working industry, as the waste bits of hard wood are used for making them. About a dozen operations are required altogether, first turning them out of cubes of wood, then

slotting, drying, polishing, finishing, and packing them.

Clothes-pins must be smooth so as not to tear the clothes. The metal in the patent pins must be non-rusting.

Irons

Irons come in a variety of shapes, sizes, and weights according to the use to which they are to be put.

Sad irons are the ordinary irons with attached handles. The handles of some styles are ventilated to keep them cool. These irons are sold by weight, ranging from 4 to 8 pounds. The usual family will require:

1 8-lb. iron for table and bed linen
1 6-lb. iron for ordinary garments
1 3- or 4-lb. iron for thin garments

At least three are always necessary for efficient work.

The word "sad" is used here in its obsolete meaning of "heavy."

Irons with detachable handles are convenient because the irons do not require a holder. The handles are usually of wood, sometimes of iron, and are also sold separately.

Box irons are hollow, holding pieces of heated metal or hot charcoal, which are slipped in at the wide end and held by a spring. They are easy to keep clean. They do not come in many sizes. The heat may be regulated by a damper.

Gas, gasoline, alcohol, and *electric irons* have heat applied in various ways from the inside. These styles give an even, continuous heat, save steps, and can be used in any room.

Flouncing irons are narrow with long, slender points. They are convenient for gathering and shirring the material.

Polishing irons are small, chunky irons with a corrugated surface, which gives more friction than a smooth one. They are used for polishing shirt fronts, collars, and cuffs.

Fluting irons have two fluted surfaces, one fitting into the other. The ruffle to be fluted is first ironed smooth and then laid, a section at a time, between the heated surfaces of the fluting iron.

Goffering irons are scissors-shaped instruments for plaiting or crimping.

Puff irons are egg-shaped or with a rounded knob, over which puff trimmings can be passed.

Irons are faced with steel or nickel. Steel-faced ones must be kept in a dry place to prevent rusting. If they are to be stored for any length of time they should be coated with a thin layer of grease or oil to prevent rusting.

Ironing stands are frames to keep irons from resting on the ironing sheet.

Iron heaters are sold for use over a single gas burner. They are cast iron plates, either round or square, with

a ventilated edge. They distribute the heat more evenly and prevent the irons from being smutted by contact with the flame.

Ironing Boards

There are several varieties of ironing boards, each adapted to its particular purpose.

They may be either in the form of strong and steady tables, or they may be single boards to be placed upon supports as desired.

The tables are of either hard or soft wood, usually adjustable to three different heights, and folding. The frames may be of steel, which is very strong and prevents wabbling, or of wood.

The regulation board is from 5 to 6 feet long, and 2½ feet wide at its widest end. This may be used for all purposes. Boards also come in small sizes, 3, 3½, 4, or 4½ feet long.

Skirt boards are convenient for pressing skirts. They are from 3 to 6 feet long and from 6 to 18 inches wide.

Sleeve boards are small, narrow boards mounted at one end on a stand, thus allowing the sleeve to be slipped over the board. In using the board the sleeve should be pulled over so that the cuff is at the small end of the board and the seam at the edge. As the sleeve is ironed it is pulled over. These boards are useful in ironing many small garments.

Bosom or *shirt boards* for ironing men's shirts prevent the interference of the back and the front of the shirt while it is being ironed. They come in two sizes, 12 x 8, and 18 x 10 inches. They are of very hard wood so that the surface of the piece being ironed will take a high polish.

All ironing boards must be well padded and covered. The woods from which they are made are cypress, cottonwood, spruce, basswood, and white pine. (See Chapter VI.) The frames of ironing tables are of maple.

Clothes Horses

Clothes horses are racks upon which clothes are hung to air. One variety has two or three folds of ladder-like racks. The wood must be smoothly finished so as not to catch and tear the clothes. A good size is 5 to 6 feet high, with each fold 2½ feet wide.

Another variety is collapsible. When spread out it stands firmly on the floor, and holds a great many clothes. When folded together it takes very little space.

Curtain Stretchers

Curtain stretchers are adjustable, light wooden frames, usually of basswood, fitted with either stationary or movable pins for holding curtains tight while they are drying. Lace or net curtains should

never be ironed, as they stretch and pull out of shape. The curtain stretchers make them dry evenly. The pins must be of some non-rusting material, usually brass, nickel-plated. The stretchers come 2 and 4 yards long.

Chapter XIII

IMPLEMENTS FOR THE SINK

Stock

The implements necessary for dish-washing and dish-drying and other uses in the sink are few and simple. They consist of:

Dishpans
Draining pans
Dish mops and cloths
Pot cleaners
Soap dishes and shakers
Wash basins
Sink strainers
Sink brushes and shovels

Dishpans

Dishpans are made of fiber, tinned ware, enameled ware, and aluminum. They are either round or oval and come in a number of sizes. Oval pans are especially desirable in small sinks, as they utilize the space best.

The pans in which dishes are washed are larger and

deeper than those used for rinsing and drying. The larger sizes can also be used for canning and cooking purposes.

A special make found in many stores consists of a rectangular, heavy tin pan, with four removable rubber legs, which raise the pan from the sink and thus protect the sink bottom. In the bottom of the pan is a rubber stopper, and when this is removed the dish-water flows out through a strainer which slides in and out under the pan like a drawer and can be easily removed for cleaning.

Draining Pans

There are three varieties of draining pans:

Simple wire baskets.

Baskets having racks upon which plates may rest.

Galvanized iron pans with heavy wire racks in which dishes may be placed so that they do not touch.

If dishes are rinsed in very hot water before being put into the draining pan, they need not be wiped, as they will dry naturally. Silver, however, should always be wiped by hand. Unless the dishes are arranged so that they do not touch one another in the pan, they are likely to be streaked and spotted.

Dish Mops and Cloths

Dish mops are made of cotton waste with wooden or

wire handles. Some women prefer dish mops to dish cloths because they cannot easily be used for any other purpose than dish-washing. Mops also save the hands. They should be thoroughly washed after each use.

Dish cloths are made of loose-meshed cloth which will not hold food particles and washes easily.

Pot Cleaners

Pot cleaners are of several kinds. One style is of woven or of knitted cloth with copper tinsel woven in, the sharp edges of which act like knives. These can be used on all kinds of ware, but it is not wise to use them on tinned ware, as they are likely to scratch off the coating of tin and thus expose the iron to rust.

The wire ring pot cleaners are not so sharp as the copper tinsel variety, but are especially good for heavy pots.

Plate scrapers are flat rubber pieces used to scrape food particles from dishes before washing.

Still another style is a small metal plate with a sharp knifelike edge.

Soap Dishes and Shakers

Dishes for holding the soap are made either to rest on a flat surface or to be fastened to the wall over the sink. They are usually of enameled ware or of wire, sometimes of galvanized ware, and are usually pro-

vided with a removable perforated tray upon which the soap rests.

Soap shakers for making soap-suds in the dishpan are wire mesh containers, either square or round, with wire handles. Small pieces of soap which would otherwise be wasted can thus be utilized.

Wash Basins

Basins for sink use are found in both tinned and enameled ware, sometimes in galvanized ware, in a large number of sizes.

Sink Strainers

Triangular sink strainers of wire, or of perforated enameled ware, are used by many housekeepers, being placed in the corner of the sink for catching bits of food which might otherwise cause a stoppage in the pipes.

Sink Brushes and Shovels

Special brushes for sink-cleaning purposes are made of the stiff palmyra, bassine, or union fibers. It is very important that sink brushes be sanitary; and one style, somewhat the shape of a whisk broom, is made without any cement, so that it can be boiled. A shovel is often attached to the handle. Short-handled shovels of galvanized iron are also used in cleaning the sink.

Part III — Special Articles

Chapter XIV

REFRIGERATORS

Principle of Refrigeration

One of the first things to be learned in studying a refrigerator is that its looks have nothing whatever to do with its efficiency. The purpose of a refrigerator is to keep food fresh. It does this by means of a low temperature, which is supplied by melting ice. Melting ice cools the air because some of the warmth of the air is abstracted in the process of melting. Therefore the first essential of refrigeration is a low temperature. The second is construction that will maintain that temperature.

The principle upon which refrigerators are constructed is the same as that of the fireless cooker and the thermos bottle — namely, to surround the enclosed air with insulating material, so that the outer air cannot reach it.

It is easy to see that a refrigerator may be a beautiful piece of ornamental furniture and yet may be

utterly lacking in these two essentials. It is noticeable also that customers quite generally are attracted by the appearance rather than the construction of this piece of household furniture.

Styles

Despite the numerous varieties and makes of refrigerators on the market today, all can be grouped into one or the other of two styles, side-icing and top-icing.

In the top-icing style the compartment which holds the ice extends across the entire top of the refrigerator. Because of its proportionately narrow width, the top-icing style takes up less room and is therefore suitable for apartment house use, or for small houses where space is limited. In this style the ice compartment is very large in proportion to the size of the refrigerator and is therefore suitable for use where the daily ice supply is irregular, as in the country. It also permits bottled water and milk to be placed next the ice. In some top-icing styles the cover of the ice chamber lifts up; in others there are one or two doors. Less cold air escapes when a cover is lifted than when doors are opened, but otherwise this style is less convenient.

In the side-icing style the ice compartment occupies only a part of the top space, but is deeper than in the top-icing style. One advantage of this type is that the ice does not have to be lifted to any great height and

so there is less danger of its being thrown into the chamber. It is important that the space beneath the ice chamber in the provision chamber, the coldest part of the refrigerator, be deep enough to hold a bottle of milk.

Ice Chests

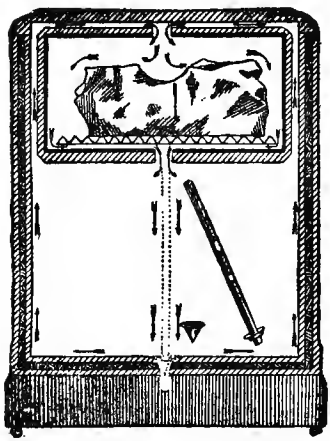
Ice chests, in which the ice and food are placed in the same compartment, are used in some households and by those who have a large quantity of one variety of food to keep — grocers, restaurant-keepers, etc. There is no circulation of air in an ice chest.

Circulation of Air Currents

The efficiency of a refrigerator depends upon the circulation of air in it.

Cold air is heavier and smaller in volume than warm air. Therefore the air cooled by the ice falls to the bottom, passing under the ice rack and through the cold air flues. When the doors are closed this creates a suction at the top of the ice chamber, which draws the air in from the top of the provision chamber and leaves room for the cold air to flow into the bottom of the provision chamber. This happens in any style of refrigerator, but its action may be accelerated by the construction.

In the side-icing style the cold air falls from the side ice chamber to the bottom of the refrigerator. It



Courtesy of Alaska Refrigerator Co.

Figure 6. Circulation of Air in Top-Icing Style of Refrigerator

pushes before it the warm air, which must go into the only place there is for it, the other side chamber. The warm air rises and must pass then across the ice chamber, where it in turn becomes cooled by the ice and falls to the bottom of the refrigerator. In this way a continuous circulation is maintained.

In the top-icing style the cold air falls a greater distance at once and the circulation is very rapid and marked. The warm air rises through flues at the end and the back of the ice chamber. Figure 6 shows these currents of air.

Placing of Foods

When the circulation of air in the refrigerator is understood it is easy to see why foods should be placed in certain places.

In the side-icing style, for instance, milk, butter, cream, or any other food which absorbs odors readily, should be placed directly beneath the ice where the cold

air passes first after its cooling and before it has had time to absorb any odor from other food.

Beside the milk and other foods of this type, and at the bottom of the large provision side, may be placed foods of a neutral nature, such as meats, etc. Foods with a strong flavor, such as fish, fruits, vegetables, etc., should be placed on the top shelf whence the air will return to the ice compartment. There the condensation of the warm air on the ice causes the absorption of odors, which are really particles of food. These pass off in the drip water and are afterwards found accumulated in the waste pipe and trap as slime.

The middle shelf is the proper place for left-overs from the table.

In a top-icing style of refrigerator a similar arrangement should be followed — milk, butter, etc., on the top shelf, neutral foods on the middle, and strong-flavored foods at the bottom.

Since the air which flows into the ice chamber is loaded with odors, no uncovered food should ever be placed in that compartment. Tightly closed bottles may be placed next to the ice.

Insulation

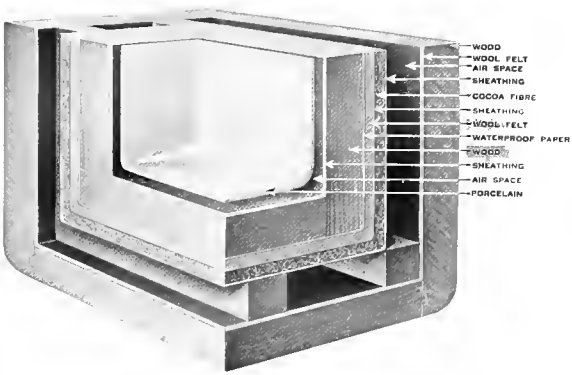
The manufacturer's provision for maintaining the low temperature is by good insulation, that is, surrounding the walls with material which will not conduct the heat. Upon the number and character of the

layers depends the efficiency of the insulation. If the walls could be perfectly insulated they would not absorb heat; and if the box could be kept closed permanently the ice would melt until the temperature was freezing, and would remain there forever. But there is no such thing as perfect insulation, as even in the very best refrigerators a small amount of heat enters through the opened doors and through unpreventable small spaces between the insulating material.

Sawdust, charcoal, mineral wool, felt, vegetable fiber, granulated cork, together with dead air chambers, are used for insulation. The materials should be packed tightly to prevent circulation of air currents within the insulating material itself.

One to two and a half inches, not including the wooden case and lining of the refrigerator, insure fair insulation. The best refrigerators have from eight to twelve layers. One well-known make has the following layers:

Porcelain enamel lining
Inside wood lining
3-ply red rope water-proof paper
Wool felt deafening paper
Fiber insulation
Dead air space
Fiber insulation



Courtesy of Grand Rapids Refrigerator Co.

Figure 7. Layers of Insulation in the Walls of a Refrigerator

Wool felt
3-ply red rope water-proof paper
Outside wooden case

All the best makes have a "dead air" space, that is, a small air-tight compartment in the midst of the insulation. Air is a very poor conductor of heat. Figure 7 shows this air space and the layers of insulation.

In painted lined refrigerators it is particularly important that the insulating material be non-absorbent, as moisture lowers the efficiency of insulating material, and thus in time the wooden cases are warped.

A good refrigerator well filled with ice should easily maintain a temperature of 40° to 42° F. If it does not do this there is something wrong with the insulation. Medium grades maintain a temperature not lower than 50°, and poor ones probably not less than 60°.

It is important that the outer case be tightly joined to prevent the admission of warm air. The best joints are the tongue and groove kind. (See Chapter VI.)

Frames

The frame of a refrigerator is not usually seen. It is an important part of the article, however, just as important as the frame of a house. In fact, refrig-

erators are built in much the same way as a house. The frame work is first erected, and the outer and inner casing built upon it.

It is essential that the frames be strong, and therefore hemlock and shortleaf pine are the woods most often used, as they are exceedingly tough.

Material of Outer Cases

The outer case of a refrigerator is made of wood, porcelain, or steel. Wood is the most frequently used; porcelain and steel are newer and more expensive materials.

Oak, ash, and pine are the woods used. In the higher-priced refrigerators oak is used because of its beauty. Ash is found in the medium-priced ones. When finished and stained it closely resembles oak. Pine is the least expensive. It is usually grained and painted in imitation of either ash or oak. As pine is able to withstand dampness far better than are hard oak and ash, it is very satisfactory for refrigerators which are to stand in a damp place such as a cellar.

White porcelain cases are very attractive and durable if given the proper attention. Porcelain is very hard, so that it will not scratch; very smooth, so that dirt does not cling to it easily; and is also non-absorbent. The liquid porcelain is fused onto the steel case at a very high temperature so that the two materials are practically one.

All-steel refrigerators are made of galvanized steel within and without. The joints must be soldered air- and water-tight. The outside of the case is often coated with a white enamel. These refrigerators are used on boats, or at the seashore, or wherever it is very damp.

Construction of Case

Wherever the wood in the wooden cases is joined, as in panels, doors, corners, edges, it is tongued and grooved and glued in addition. The tighter the joints are, the less danger there is of warm air leaking into the inside space.

In the more expensive refrigerators the wood in the outside cases is as carefully matched and as artistically set as in any piece of furniture.

Rounded corners and edges are better since they do not hold dust.

Ice Chamber

A refrigerator is built to scale with a certain sized ice chamber according to the size of the refrigerator. This chamber should be kept filled with ice if the refrigerator is to give any sort of satisfaction. For instance, if a chamber is built to hold 100 lbs. of ice, a 25-lb. piece cannot keep the refrigerator at the proper temperature and it therefore melts faster in proportion than a larger piece would.

Galvanized steel is the universal lining material for ice chambers because of its strength and non-rusting properties. The joints in this lining must be water-tight to prevent ice from leaking through the insulation.

The removable galvanized steel rack upon which the ice rests should be set up high enough from the bottom of the chamber to allow a free circulation of air underneath, as the cold air flue leading into the provision chamber is beneath the rack.

In many houses it is possible to have the refrigerator located against an outside wall, so that by cutting an extra door in the back or end of the refrigerator, and a corresponding door in the wall of the house, the ice can be placed in the refrigerator from the outside, thus doing away with the necessity of the ice man's entering the house. This extra door must be as carefully made as the others, and orders taken for the work by the salespersons are usually filled by the manufacturers.

Provision Chambers

The requisites for the lining of the provision chamber are that it must not retain moisture or odors, and must show dirt or stains at once. In other words, that it must be sanitary.

The materials which satisfy this requirement are:

Porcelain	Galvanized steel
Opal glass	Enameled steel

Porcelain is a very sanitary lining for the reasons mentioned in connection with its use for cases.

Opal glass is a heavy, opaque, perfectly white glass with a highly polished surface to which grease or dirt does not easily cling.

Galvanized steel is next in point of satisfaction to porcelain or glass. It does not rust.

Paint-enameled steel is attractive, but it has the disadvantage of scratching easily, thus exposing the steel to rusting. If this occurs and the insulating material becomes dampened, the effectiveness of the refrigerator is lost.

All corners of the lining should be rounded to prevent the accumulation of food particles. In the better grades where porcelain or opal glass is used for lining, the lining is made in one seamless piece. The steel tank is first made in the required size and shape, and then the porcelain applied to it. When the lining is put into the refrigerator in sheets, moisture will not work through the joints if the edges of the sheets are flanged or rimmed and overlapped.

Shelves and Trimmings

Shelves are removable to insure ease of cleaning. Tinned or galvanized woven wire ones are the most

satisfactory, as they allow a free circulation of air.

Clasps and hinges should be of brass, or nickel-plated, or of some other non-rusting metal, not only for appearance, but for service. Automatic locks which lock the doors as soon as they close are a help in saving ice.

Casters are more satisfactory if they are ball-bearing. A ball-bearing socket is one in which the shaft rests upon balls, each loose and turning with the shaft. This lessens friction and insures an easy movement.

Traps

The best refrigerator traps are fitted with syphons which prevent the escape of cold air or the entrance of warm air through the pipe. These add greatly to the efficiency of a refrigerator.

The drain pipes should be of some non-rusting material.

Refrigerator Pans

Most modern houses are equipped with a special drain for carrying off the drip water from the refrigerator. In cases where there is no such provision a separate, shallow, wide-topped, galvanized iron pan is sold for the purpose.

Care

Manufacturers have realized that the first requisite

in the care of a refrigerator is absolute cleanliness. Therefore refrigerators are made so as to be very easily cleaned.

It is essential that they be given a thorough cleaning at least once a week with a solution of borax, washing soda, ammonia, etc. There should be no crevices where filth can accumulate. Wire swabs and brushes are provided for cleaning the drain pipe. Ice should be rinsed off before being put in.

Food should not be put into the refrigerator while warm, as this raises the temperature and lowers the efficiency of the chamber.

Refrigerator doors should be closed as soon as possible after opening to prevent the loss of cold air and the entrance of warm.

Ice should *never* be wrapped in paper or a cloth. The ice can cool the refrigerator only by its melting and any wrapping retards this.

A refrigerator should not be placed in the sun, or near a stove. Neither should a wooden one be placed out of doors or in a very damp place where the wood will warp, cause the joints to open, and thus destroy the circulation.

Sometimes customers may complain that a refrigerator leaks, when it does not leak at all. The appearance may be caused, especially in warm weather, by the condensation of warm air on the coldest part of the refrigerator.

Selling Suggestions

A supply of imitation goods, such as milk and cream jars, butter, vegetables, meats, etc., is very useful in demonstrating the capacity or arrangement of foods in a refrigerator. Such a display will often arrest the attention of a customer, and cause her to stop to hear a demonstration.

Either a cross-section of the insulation of a refrigerator or an illustration or diagram of this is essential in demonstrating a refrigerator.

The saleswoman should be able to tell the ice capacity of the various refrigerators in the department and also the amount of ice consumed daily, for this is the first thing a customer will want to know.

Summary of Selling Points

The essential features of any refrigerator are:

1. Good insulation
2. Good circulation of air
3. Ease with which it may be cleaned

Iceless Refrigerators

Small-sized iceless refrigerators are popular for use where the daily ice supply is uncertain. They are made of porous earthenware which is kept moist. They depend on the principle of cooling by evaporation.

Chapter XV

ICE-CREAM FREEZERS

Varieties

There are two distinct styles of ice-cream freezers: those which require turning, and those which do not.

Freezers Operated by Crank

The freezers which require turning have the following parts:

1. An outside tub for holding the ice
2. A can for the cream, revolved by a crank
3. A dasher fitted inside the can

The *outside tub* may be of wood or of metal. If it is of wood it must be of a kind which stands dampness well, such as pine. It should be well seasoned to prevent warping, and the staves should fit snugly to insure a strong, water-tight pail. The staves of some wooden tubs are held by flat hoops, those of others by round hoops. The round ones hold better when there is a groove into which they fit. All hoops should be galvanized to prevent warping. In making the wooden tubs the parts of the freezer are assembled individually, and, because of slight variations in the

castings, gears, etc., the tub is shaved off here and there until the whole apparatus is properly adjusted to run smoothly.

The metal tubs are of galvanized steel.

The *can* for the cream must be of some material which will not make poisonous compounds when in contact with the cream. Heavy tin plate is ordinarily used. It is essential that the can be very strong, because if it becomes at all bent the scrapers will not work. The top also needs to be rigid to keep it from bending when the user bears down with a spoon on the edge to dig out the cream. It is therefore an advantage to have the top reinforced with heavy wire. A pressed steel bottom is very strong.

The cover of the can must fit very closely so that the ice and salt will not reach the cream. The gears should be covered to prevent pinching the fingers.

Dashers differ according to the construction of the freezer,— whether the action is double or single.

In the double-action freezers the dasher turns in the opposite direction from the can. It has wood scrapers, working on small hinges which remove the cream from the sides of the can as fast as it freezes, and pass it to the inside. The central shaft of the dasher has projecting "floats," spoonlike pieces of metal, which beat and throw the cream to the outside of the can. This action brings the coldest part of the cream to the center, and removes the softest part to

the sides where it is frozen. A continuous motion is thus set up.

In the single-action freezers the dasher remains stationary, and only the can revolves. This style requires fewer parts and less workmanship, and is therefore less expensive. The cans and tubs are usually similar to those in the double-action type.

Recently a freezer in which two kinds of cream or sherbet may be frozen has come into the market. The can is divided into two parts; the partition projects above the top of the can and touches the lid so that there is no danger of the contents mixing. There are dashers in each partition, and these work backward and forward, making half a revolution in each direction. The handle is rocked back and forth instead of being turned.

Freezers are made in the following sizes: toy, 1, 2, 3, 4, 6, 8, 10, 12, 14, 15, and 20 quarts. The larger sizes are used in hotels, restaurants, and by confectioners. This type of freezer is operated by power generated by means of a fly-wheel instead of a crank.

Crankless Freezers

The construction of the crankless freezer is quite different from that of the type just described. This style makes a very neat, clean implement.

It consists of a single can which has three compartments:

1. An inner compartment for the cream
2. A surrounding compartment for the ice
3. A double wall with air space around the entire can

The compartments for the cream and ice must each have a tightly fitting cover. The air space around the can prevents heat from entering the freezer or cold from leaving it. It is, in fact, a miniature refrigerator.

These freezers require a longer time to freeze the cream than does the other variety. The claim is made that this longer time makes the cream as smooth as the beating in the shorter process.

Ice Chippers

These are implements with steel teeth for reducing a cake of ice to small pieces for use in the freezer. The advantage of their use is that they save the ice by cutting it into uniform pieces, instead of the uneven chunks obtained when ice is pounded with a mallet in a bag. Moreover, the chipped ice packs more solidly around the can and shortens the time of freezing. These implements are also useful in chipping ice for cold drinks or other foods.

Principles of Freezing

Freezing cream depends on the reaction which takes place when ice and salt are mixed. Whenever ice

melts it withdraws heat from the surrounding substances. In an ice-cream freezer the ice withdraws heat from the cream. Salt simply makes the ice melt faster than it would by itself. There are other substances which will do this, but salt is the cheapest and most common. The rate at which the ice melts depends upon the amount of salt used; the more salt the faster the action. If too much is used, the cream will be coarse-grained. Careful experiments have shown that the best proportion is three parts ice to one part salt. For ices, frappés, etc., where it is desirable that the dessert have a granular texture, two parts of ice to one part of salt is satisfactory.

Directions for Use

The salesperson should be able to tell the customer how to use the freezer, even though directions are supplied by the manufacturer.

For the freezers operated by a crank: Scald can, cover, and dasher, and then chill them. Place the can in the freezer, put in the dasher, and pour in the cream. Fill only three-fourths full, as cream expands in freezing. Cover and adjust the top. Turn the crank to be sure that the can fits in the socket. Fill the space with the mixture of salt and ice, and cover the can with it. Turn the crank slowly at first, adding more salt and ice if necessary. After freezing draw off the water, remove the dasher, push down the cream solidly with

a spoon and repack, using four parts of ice to one of salt. Cover with a blanket.

For the crankless freezers the operation is very similar. The ice space is filled first with the ice and salt in the same proportion as for the other freezers, and the cover of the ice chamber fitted on. The cream is then poured into the cream compartment, and the cover placed on. Stand the freezer with the cream end up. In ten minutes reverse and let it stand in this position for the rest of the thirty minutes.

The Appeal of Ice-Cream

There is no other dessert with such a universal appeal as ice-cream, and customers are always eager to learn new recipes and methods of making frozen dainties. The saleswoman will find it advantageous to know a few standard recipes, as this definite information will sometimes so appeal to the customer that it will clinch a sale which otherwise might be lost. She should also know the differences between the various frozen desserts.

Ice-cream is made of flavored, sweetened cream which is usually frozen while being stirred. This is known as American or Philadelphia ice-cream. Another form known as French or Neapolitan cream contains eggs in addition to sugar and flavoring, and is cooked in a double boiler first. This variety is especially adapted to chocolate, caramel, or nut creams.

Water ice is sweetened fruit juice, diluted with water and frozen.

Frappé is water ice frozen to the consistency of mush.

Sherbet is a water ice, to which a small quantity of dissolved gelatin or beaten whites of eggs has been added. Some sherbets are also made with milk.

Frozen fruit is fruit pulp that has been frozen.

Frozen punch is a water ice to which spirits or spices have been added for a stronger flavoring.

Sorbet is really frozen punch.

Mousse, parfait, and *biscuit* are made of sweetened and flavored whipped cream, sometimes with the addition of eggs or gelatin. They differ from ice-cream in being beaten before instead of during freezing.

Frozen custards are thin boiled custards frozen to the consistency of ice-cream.

Another suggestion which always appeals to the prospective purchaser of an ice-cream freezer is the purity of home-made cream versus the uncertainty as to the cleanliness and the ingredients of manufactured cream.

History

The first ice-cream was made by a London confectioner, Gunton. It was introduced into America by Dolly Madison at a White House reception during the administration of President Madison. The method

used by the English confectioner was crude and uncertain, and the ice-cream freezer was invented by Nancy Johnson, the wife of an American naval officer.

Today the ice-cream business has grown to be an enormous industry. It has been estimated that during 1916 the American people consumed 250,000,000 gallons of ice-cream. This would mean an average consumption of 60 dishes a year for each person.

Summary of Selling Points

Although each freezer has its distinctive features, to be satisfactory any freezer must be:

Dependably constructed
Easily operated
Economical in the use of ice

Chapter XVI

FIRELESS COOKERS

Increasing Popularity of the Fireless Cooker

One of the most important of the recent inventions for saving time, labor, and fuel is the fireless cooker or fireless cook-stove. Although the use of the "fireless" has increased rapidly during the last ten years, its operation is still a mystery to most people, and the salesperson needs to be well informed as to the principle of fireless cooking and the method of using the cookers successfully.

She must also be able to forestall objections and complaints resulting from ignorance or carelessness, and be a real adviser to the customer who is purchasing a cooker for the first time.

Principle of Fireless Cooking

The principle of fireless cooking is simply the conservation of heat through insulation. Insulation in a refrigerator shuts the heat out; in a fireless cooker it shuts the heat in.

The articles on an ordinary stove are constantly losing heat from the surface of the cooking vessel and

the steam which rises from the boiling water; while the stove itself is wasting far more heat than it supplies to the food. In the fireless cooker this waste is done away with, and it is estimated that from 75 to 80 per cent of the fuel is saved.

Primitive Fireless Cookers

Norwegian peasants for generations have used a "hay box" in which they left the meal to be cooked while the entire family were out in the fields at work. Later the German peasants would start soup cooking on the stove and then cover it up in feather beds, leaving it to continue cooking. At last the hay box found its way to France and was improved and exhibited at the Paris Exposition in 1867 as a new method of cooking.

Clambakes are on the same principle as fireless cooking. The clams are placed between hot stones and covered with seaweed.

The use of fireless cookers has increased greatly in the last few years with the advent of many other improvements in kitchen conveniences. The fact that gas, gasoline, and kerosene have so widely displaced wood and coal has increased the use of the fireless, because, when a fire was kept in the stove all day slow-cooking dishes could be prepared without considering the amount of fuel expended, but when a special fire was needed it made cooking more expensive.

The earlier cookers were little more than hay boxes, but so many improvements have been made that insulation is now almost perfect, and food placed in the modern fireless cooker in the raw state can be thoroughly and deliciously cooked with no other heat than that supplied by its soapstone or metal radiators.

Parts

The fireless cooker consists of a wooden or metal box, containing one or more air-tight wells for the food, and a quantity of insulating material to prevent the escape of heat. Figure 8 is a cross sectional view of a fireless cooker, showing the construction of the case and the insulation.

Case

The outside case of the fireless stove may be of hard wood or of sheet steel. In any case it must be well made and tightly joined to insure good insulation.

The interior lining, and that used for the wells, is ordinarily of aluminum or nickeled copper. Aluminum is most often used. The material must be non-rusting and easily cleansed, as it is constantly exposed to moisture and to foods. The lining for the wells must be so made as to prevent any leakage of moisture into the insulation.

Insulation

The most important part of the entire cooker, which

is the insulation, is never exposed to view. The materials used for the purpose are:

Mineral wool
Cork
Asbestos
Excelsior

These materials are all very poor conductors of heat.

Mineral wool is made by allowing a jet of steam to escape through a stream of liquid slag. The slag is blown into fine white threads, called mineral wool.

Cork is the bark of a tropical tree. When used for insulation it is granulated.

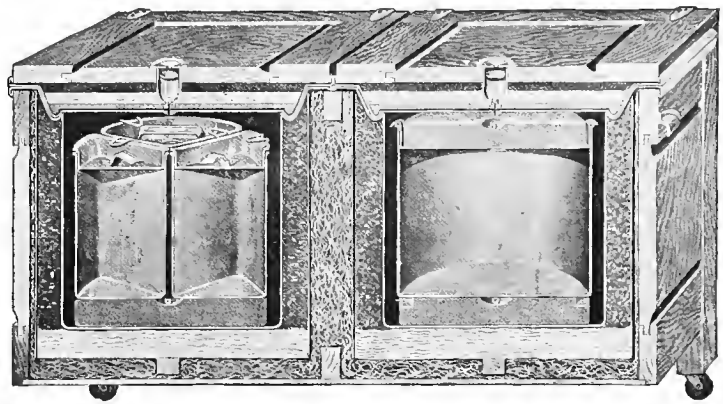
Asbestos is an incombustible fibrous mineral mined in various parts of the country.

Excelsior is finely shaved wood.

The insulating material is tightly packed in between the well and the case so that no crevice is left for the escape of the precious heat. In well-made cookers, as has been said, the lining is seamless, so that there is no danger that the steam will penetrate and thus destroy the efficiency of the insulation.

Radiators

The radiators are disks of soapstone or iron which are heated over a fire and placed in the cooker to



Courtesy of Toledo Cooker Co.

Figure 8. Cross-Section of a Fireless Cooker

supply a part or all of the heat necessary to cook the food. The soapstone radiators absorb and retain the heat better than the metal ones (they will maintain an oven temperature for three hours, while the iron will do so only for one and a half hours), but they require care to prevent cracking and chipping.

Cooking Vessels

Aluminum vessels for fireless cooking are most satisfactory, because aluminum stores up a great deal of heat. They should be "drawn" smooth and seamless to prevent waste of heat or leakage. In the less expensive cookers, vessels of gray enameled ware are sometimes found.

The covers must be fitted tightly and have clamps to hold them down. Some covers have a hook for suspending the heated radiators when these are used inside the vessels; in others there is a rack for this purpose.

The vessels may be obtained in sets, two or three of which fit into a well so that various kinds of food may be cooked at one time.

There is no danger from explosions of steam in fireless cookers, as some persons perhaps may imagine, because the cookers are either provided with valves in the outer cover to let off excess steam, or the cover is constructed so as to allow enough leeway for steam to escape.

Methods of Cooking

There are three methods of cooking in a fireless cooker, depending upon the use of the radiators.

1. The simplest method is to heat the food first, bringing it to the boiling point, letting it boil a short time on the stove, and then placing it in the cooker without the heated radiators. This is used in cooking cereals, vegetables, fruits, and meats which are boiled.

2. The food is placed in the cooker cold and raw with the heated discs, one at the bottom and one at the top of the cooking utensil. This method is used for baking bread, cake, beans, meats; in short, for all foods which are to be roasted or baked.

3. The third method is a combination of the two preceding ones. The food is heated first on the stove and then placed in the cooker with one or two heated discs, according to the judgment of the cook. This method is useful for all kinds of food.

For boiling or steaming, only one radiator is used at the bottom of the well. For baking, two are required, one below and one above the food.

Suggestions for Fireless Cooking

Good cooking in the fireless, as in other stoves, requires knowledge, patience, experience, and good judgment. Customers should be reminded that they must not expect to put poorly concocted dishes into the fireless and take out perfect specimens of cookery. They

should study the sample recipes prepared by manufacturers of cookers and note special requirements.

Recipes for fireless cooking differ from ordinary recipes chiefly in the amount of water used. As there is no chance for water to escape or evaporate, less liquid is needed than on the stove.

Small quantities of food should be cooked in small vessels, not in large ones.

In preparing food for the fireless, the preliminary heating must be done in the fireless vessels, not transferred to them from another.

Fireless cooking is most suitable for foods requiring a long, slow cooking and the application of moist heat, such as boiling and stewing cereals, soups, meat, dried fruits and vegetables, steamed bread, puddings, etc. It preserves the flavor of meats and vegetables, as no odors can escape.

Advantages

Of course, the chief advantage in the use of the fireless is economy of fuel. It saves approximately three-fourths of the gas or coal used in cooking in a range. In a short time this saving will pay for the cost of the cooker.

It is also economical because cheap cuts of meat can be cooked tender by its long, slow process.

The point of convenience is always a telling one to make. The use of the fireless does away with a great

deal of the watchfulness and the time that are required for superintending oven or stove cooking.

It also helps to keep the house cool in summer. It can even be used for preparing frozen desserts, like mousse.

The length of time for cooking depends on the nature of the food, and upon the amount of heat in the discs and in the food itself when placed in the cooker. The more heat there is in the material when it is put in, the quicker will be the cooking. A good fireless cooker will retain a cooking temperature for 4 or 5 hours, and the food will not become cold for 4 or 5 hours after that. It takes from one-fourth to one-third longer time in the fireless than in a regular oven or stove.

Suggestions as to Care

The fireless needs little care to keep it in good order. The wells should be kept odorless by airing them each time after cooking. If greasy food has been cooked, the wells should be washed with hot water.

If the wells have seamed linings, it is a good plan to wipe them out each time before using with olive oil, to prevent steam from penetrating any possible crack.

In caring for the vessels the same rules apply as for all aluminum utensils. (See Chapter V.)

The soapstone radiators should be kept dry and warm, as they readily absorb moisture, which will

form steam when heated and cause them to crack. In heating them the heat should be only moderate at first, until the discs are warmed through, and then intense heat may be applied.

Both soapstone and metal radiators should be heated before they are used for the first time. The soapstone should be baked in the oven to dry it out and the metal heated over a slow fire to remove the " new " odor.

Chapter XVII

KITCHEN TABLES

Working Tables

Kitchen tables are plain, and simply constructed. Some are fitted with one shallow drawer for a few implements; others have drawers, draw boards, and bins. The latter sort are called pastry tables.

It is essential that a kitchen table provide a broad working surface for the utensils and the materials used in cooking. Table tops vary in size; some of the popular sizes are 28 x 32, 28 x 48, 27 x 53, 28 x 72 inches.

It is also desirable for sanitary reasons that the top be of some non-absorbent material.

Tops

The materials of which the tops of tables and cabinets are composed are:

Wood	Glass
Zinc	Marble
Porcelain	

Wooden-topped tables are of poplar, ash, oak, or

pine. They may be simply sand-papered or varnished. They should be covered with oil cloth for protection.

Zinc is a good and inexpensive covering for a wooden top. Bulging of the zinc may be prevented, if the wooden table top is paneled to avoid warping, and the zinc is nailed on tightly.

Porcelain tops are fused onto sheet steel, and are strong and durable. The frames and legs may be enameled.

Glass tops are easy to keep clean and are very attractive, but hot dishes are apt to crack them and grinders or choppers cannot be clamped to their edges. Glass-topped tables have either metal or wooden frames.

Marble-topped tables are made of Italian or American polished marble. They are unexcelled for pastry and candy-making.

If there are bins for flour and cereals they should be lined with zinc or tin to keep out mice and dust.

Frames

The wooden frames for tables, whatever the tops may be, are usually of hard maple. They should be carefully tenoned and strongly finished. The legs may be either square or round.

Height of Working Surfaces

A very important consideration in any table or work-

ing surface is that of suiting its height to the height of the worker, who should be able to stand erect, and at the same time be able to work with the weight of the body over the table. The proper height of the surface is about eight inches below the worker's waist line. The following table will show the proportional heights:

Height of Woman	*Proper Height of Surface*
4 ft. 10 in.	27 in.
4 " 11 "	27½ "
5 "	28 "
5 " 1 "	28½ "
5 " 2 "	29 "
5 " 3 "	29½ "
5 " 4 "	30 "
5 " 5 "	30½ "
5 " 6 "	31 "
5 " 7 "	31½ "
5 " 8 "	32 "
5 " 9 "	32½ "
5 " 10 "	33 "
5 " 11 "	33½ "

Care of Tables

The following suggestions for the care of table tops will be appreciated by the customer:

Wooden tops should be wiped with a wet cloth, using no more water than is necessary. They may be scoured with scouring powders, but always with the grain of the wood. They should be wiped as dry as possible afterwards. Dirt should not be allowed to

collect in cracks. Grease spots can be removed by covering them with borax or ammonia, allowing this to stand for a short time, and then scrubbing with sand soap.

Zinc may be cleaned with a little kerosene rubbed on by a flannel cloth, or with a fine-grained sand soap.

Glass or enameled tops need only wiping with a wet cloth to remove dirt.

Chapter XVIII

BASKETS

Varieties

The heavier, more substantial styles of baskets are carried in the Housefurnishings Department. They are:

Laundry baskets	Scrap baskets
Hampers	Fireside baskets
Market baskets	Lunch baskets

The fancy and art baskets are described in the manual for the "Art Goods Department."

According to the materials of which they are made, baskets may be classified as:

Splint	Bamboo
Willow	Vulcanized fiber
Reed or rattan	

Laundry, clothes, or *wash baskets* for use in the laundry may be round, oval, or oblong in shape and of varying sizes. They are seldom over 14 inches in depth. The sizes are designated by numbers, as No. 1, 2, 3, 4, etc. They are made of splint, rattan, and willow.

Hampers, which are used for holding soiled clothing, and which usually stand in the bathroom, are deep, covered baskets of varying proportions to fit different spaces.

They are made in the following shapes:

Square	Oval
Oblong	Three-cornered
Round	Half-round

The lids of most hampers are woven solid, but in some there are openings through which the clothes may be thrust. The bottom is usually of a solid piece of wood, which gives a firm, unresisting base. They are made of splints, rattan, and willow.

Market baskets, so called because they are used for carrying provisions, are made in various shapes, both with and without covers and with either a stiff over handle or drop handle. Most of them are made of willow, or combinations of willow and straw braids. They are also made of splints, and sometimes of splints and straw braids combined.

Waste baskets are cylindrical, round, or square baskets, made of all the materials used for other baskets and also sometimes of wire and vulcanized fiber.

Lunch baskets are smaller than market baskets, of varying sizes, with either straight or hinged covers, and two drop handles. They are made of splints, reed, and bamboo.

Materials

Wicker is the general term given to the materials of which baskets are made. The necessary characteristic of any material to be used in weaving is pliability.

Splints are strips of hard wood, ash, maple, elm, birch or oak, cut so thin that when wet they may be woven. Baskets may be made entirely of splints, or with splint uprights and bamboo or reed filling.

Rattan or *reeds* are strips of a kind of palm which grows in India twined about trees and hanging from branches. Sometimes the plant grows to a thousand feet in length. It is stripped of leaves and bark, split into round or flat strips of various sizes, and imported in this form.

Willow, or osier, grows in wet, marshy soils. Clay soils are unsuitable for its cultivation. It is very widely grown in Holland, Belgium, and France, where the tide floods the river basins. Large quantities are normally imported from these countries, and before the war also from Germany and Austria. In America plantations of willow are located in the vicinity of Rochester, N. Y., Detroit, Milwaukee, Cincinnati, and Baltimore. Japan has recently become a large producer of willow.

When the willow is to be used for basketry, it is not allowed to grow to tree size, as the branches must be long, slender, and supple, yet tough. For this rea-

son the willows are planted close together so that they will not branch out more than is desirable.

The shoots used for basketry are cut once a year, during the season when the plant is not growing.

The shoots are sorted into two groups according to the nature of the baskets into which they are to be made, the brown and the white. If for brown, the shoots are simply dried and stacked ready for use. If for white, they must be more carefully treated. They are tied in bundles, and stood upright in wide open trenches containing about four inches of water. In the springtime the shoots begin to bud and blossom. The bark is then peeled from them by pulling the willow shoots between two iron edges which strip away the bark. They are dried in the sun and sorted by size.

Bamboo is a plant that grows in India, China, and Japan. The stems are used for basketry and also for many other purposes.

Basket-Making

The process of making baskets is really very simple, merely one of in-and-out weaving, but great skill is required to make a basket well. They must be woven by hand. During the process the materials are kept wet to make them pliable.

The bottom is made first. In a willow basket, for instance, the heavier, stronger willows are used for

this part. Then the bottom is fixed to a number of upright willows, called spokes; and thinner ones, called weavers, are plaited in and out around the spokes. The simplest form of basketry is the "under and over" weaving, with one weaver and an odd number of spokes. There are many fancy weaves, but few of these are used in the baskets sold in the Housefurnishings Department.

When the sides are built high enough the upright spokes are bent down into the basket and a border worked around the top to give greater strength.

In the so-called bamboo-filled baskets the bottom and uprights are splints, and the filler split rattan, called bamboo. In this type the top is finished with a strip of hard wood which is nailed to each upright.

Metal strips or bands, or extra strips of wood are often used to reinforce the baskets. These run from rim to rim across the bottom of the basket.

In laundry baskets it is essential that any iron, such as nails or reinforcing strips, be galvanized or tinned to prevent the wet clothes from being rusted. It is also essential that these baskets be neatly finished with no jagged or rough places to tear the clothes.

Making Vulcanized Fiber Baskets

Vulcanized fiber is the same material as that used for covering trunks. Paper, made of cotton rags, is the base. This paper passes through a solution of

zinc chlorid, which partly dissolves the cellulose in the paper. (For information upon the manufacture of paper and upon cellulose, see the manual for the "Stationery Department.")

The paper is wound on large cylinders, the number of layers depending on the thickness desired. For waste baskets a comparatively thin weight is used. The coating of paper is then slit and removed from the cylinders in the form of large flat sheets.

The sheets are next placed in large vats and the excess of zinc chlorid removed. If it were allowed to remain it would destroy the cellulose.

The paper is then dried. It is one-half as thick after drying as before.

Finally the sides of the baskets are stamped out under hydraulic pressure and riveted together, the bottoms riveted in, and the tops rolled by hand.

These baskets are brown or green in color.

History

The willow basket is of very ancient origin. Early Greek records mention it. The Bible tells of the infant Moses being placed in a basket. In Ancient Britain the soldiers wore shields made of basketwork.

The process of making baskets today does not differ materially from that of bygone centuries.

Part IV — The Selling of House-furnishings

Chapter XIX

THE SELECTION OF AN EQUIPMENT

Considerations

A great many things must be considered when the salesperson is assisting the customer to select her tools for kitchen and laundry work.

Utensils must be suitable for the customer's needs as well as to the work to be performed. The things that determine their suitability are:

Customer's manner of living
Size of the customer's family
Construction of the articles

Customer's Manner of Living

What is essential to some families is not necessary or possible for others. What a customer can afford to spend for her equipment affects both the number and kind of articles she will purchase.

Salespeople have many opportunities for stating the truth that the cheapest ware is often far from cheap in the end. "Seconds" may be satisfactory for some purposes, but for the hard and constant wear which most utensils, especially those for cooking, receive, the best is none too good.

Where the difference in price is merely a matter of greater elaborateness or decoration, the salesperson will be doing the customer and store a service to recommend the simpler article and thus perhaps enable the customer to purchase more utensils. This consideration will surely make a friend of the customer.

Where servants are employed, many housekeepers will not purchase expensive equipment because of the likelihood of its being ruined by ignorant and careless usage. It is the customer who "does her own work" who not only needs, but buys, the more expensive labor-saving equipment. It is therefore a good principle to keep in mind that a woman who does her own work will be more interested in a bread mixer, a vacuum cleaner, or a crankless ice-cream freezer, than the one with a servant.

If a house is wired for electricity, a customer is quite likely to possess or to desire an electric percolator, toaster, grill, chafing dish, and flat-iron. At the present time, electric stoves are too expensive for ordinary purses, and this form of fuel does not generally affect the entire equipment.

What is indispensable to some families may not be needed at all by others. For instance, a family living in a small town often cannot secure good baker's food, and therefore bread or cake mixers are a welcome part of the equipment; while a city dweller would have less use for them.

In other cases the housekeeper may be a person who is away from home a great deal of the time on business or social duties, and the preparation of a meal involves the shorter cooking operations, such as broiling, rather than the longer baking and roasting processes.

Size of Family

The size of the family affects the size rather than the number of articles needed. The same variety of utensils is needed to serve a meal whether it be for two or for six, but the utensils for a small family need not be so large.

The Bride's Outfit

The bride is one of the few customers who are likely to buy a complete equipment at one time. The salesperson therefore always welcomes such a customer. Care should be taken, however, not to overstock the bride. She will appreciate the courtesy of the saleswoman's advice as to the wisdom of getting essential articles first, and having them of the best quality.

The extent of the equipment which she needs de-

pends upon the scale of housekeeping which she undertakes. If she expects to entertain a great deal she will need the same sizes and quantities of utensils that the larger family requires. If she expects to live simply and quietly and do her own work, the equipment may be simpler and the utensils small.

Standard Equipment

The saleswoman should know what articles are absolutely essential in any equipment, and what are not indispensable but merely desirable. With this thought in mind, the following list is given:

A — Articles for Cooking

1. For Boiling, Braising, Roasting, Baking

(a) Indispensables

Roasting Pan
Baking Dish
Bread Pans
Pie Plates
Muffin Pans
Layer Cake Pans
Toaster or Wire Broiler

(b) Desirables

Casserole
Double Roaster
Bean Pot
Ramekins
Custard Cups
Loose Bottom Cake Pans
Broiler

2. For Boiling, Stewing, Steaming
   (a) Indispensables
      Teakettle
      Stew- and Saucepans
      Teapot
      Coffee-pot
      Double Boiler
      Preserving Kettle
   (b) Desirables
      Steamer
      Poacher
3. For Frying, Sautéing
   (a) Indispensables
      Frying Pans (1 large and 1 small)
      Frying Kettle
      Frying Basket
   (b) Desirables
      Waffle Molds
      Omelet Pan
      Griddle
      Cake Turner
4. Miscellaneous Small Equipment for Stove
   Salt Box
   Pepper Dredge
   Flour Dredge
   Pot Covers
   Match Box
   Stove Cloths and Holders

B — Articles for Preparing and Mixing Foods

1. For Chopping, Cutting, Grinding
   (a) Indispensables
      Small Knife
      Bread Knife
      Graters

Biscuit Cutter
Can Opener
Food Chopper or Chopping Bowl and Knife
Cork Screw

(b) Desirables
Coffee Mill
Apple Corer
Small Cleaver
Slicer
Knife Sharpener
Grapefruit Knife
Palette Knife

2. For Stirring, Beating, Pressing, Rolling

(a) Indispensables
Egg Beater
Lemon Squeezer
Potato Masher
Mixing Bowls (large and small)
Mixing Spoons (1 slitted beating)
Bread Board
Rolling Pin

(b) Desirables
Butter Paddles
Bread Mixer
Cream Whipper
Mayonnaise Beater

3. For Straining and Separating

(a) Indispensables
Colander
Soup Strainer
Tea Strainer
Funnel
Flour Sifter

(b) Desirables
Egg Separator

4. For Measuring
(a) Indispensables
Measuring Cups
Measuring Spoons
(b) Desirables
Scales

5. For Containing Foods
(a) Indispensables
Receptacles for
Flour
Bread
Cake
Sugar
Spices
Tea
Coffee
Butter
Assorted sizes of
Bowls
Dishes
Platters
Plates
Pitchers
Trays
(b) Desirables
Pint Jars
Quart Jars

C — LAUNDRY EQUIPMENT
1. Indispensables
Ironing Board
Washboard
Clothes Basket

12 doz. Clothes-pins
Boiler
Clothes Line
3 Flat Irons
Wringer

2. Desirables
Fluting Iron
Sleeve Board
Clothes Horse
Curtain Stretcher
Hamper
Clothes Lifter

D — Articles for Cleaning

1. Indispensables
Long-handled Hair Brush for Uncovered Floors
Long-handled Dry Floor Polishing Mop for Painted or Polished Floors
Wet Mop for Washing Floors
Ordinary Broom for Ordinary Floors
Carpet-Sweeper
Small Brush for Corners
Dust-pan
Large and Small Scrubbing Brushes
Scrub Pail
Dusters

2. Desirables
See list of brushes in Chapter XI

E — Articles for the Sink

1. Indispensables
Dishpan
Rinsing and Draining Pans
Soap Dish
Dish Mop or Cloth

Pot Cleaner
Sink Brush
Sink Strainer

2. Desirables
Hand Basin
Plate Scraper
Soap Shaker

The Lightest of All Outfits

Those who prepare their breakfasts in their rooms, or who wish to have "chafing dish" suppers, need only a very few articles. If a chafing dish is not desired the person will require a small stewpan, a frying pan, a tray, a large mixing spoon, and perhaps an alcohol stove. With a chafing dish a customer will need also an egg beater, a can opener, and a corkscrew.

Fuel-Saving Equipment

Many plans have been devised to lessen the cost of fuel, such as constructing one utensil so that it will do the work of two, or improvements which decrease the time needed for cooking.

Fireless cookers are the first articles thought of in this connection, and a combined teakettle and double boiler is now quite common.

Flat plates of iron, which can be placed over the burner of a gas range, make it possible to use one burner for heating several flat-irons. By using a chop or steak cover these plates may be converted into miniature ovens, excellent for baking potatoes, etc.

Double or triplicate saucepans are very useful in saving fuel. More than one food at a time can be cooked in a steamer.

Time-Saving and Labor-Saving Equipment

In no place is the statement that time is worth money truer than in the kitchen, especially when a woman has many other interests and duties demanding attention. Of late years, since women have been extending their interests and devoting less time to the actual labor of the household, many utensils have been devised for saving time and labor. Among these are:

Food choppers	Mayonnaise mixers
Bread and cake mixers	Apple parers
Ice-cream freezers which do not require turning	Bread slicers
	Mangles
Dish washers	Long-handled dust-pans
Washing machines	
Silver-cleaning pans	Dustless mops

Many of these devices save food, as well as time and labor. For instance, a coffee percolator saves eggs; aluminum pans save grease; egg poachers save eggs.

Construction

When the salesperson has considered the customer's manner of living and the size of the family in relation to the articles of kitchenware which will be needed,

she should next consider what features in the construction of each article will best suit the customer's requirements.

It is not enough to study the individual pieces in the stock, as has been done in Chapters IX to XVIII. She should also *compare* their points of construction.

Some of the important features are:

Handles	Ease of cleaning
Covers	Size and shape
Lips	

Handles [1]

The style of handle on a utensil determines whether or not it will be convenient for the prospective customer to use. "A heavy utensil, well balanced, with handle or bail set in just the right place and way, may be easier to use than a lighter one in which these points were not considered and which must be kept balanced by hand and wrist in order not to tip. . . .

"The choice depends on the use to which the utensil is to be put, on its size, and on the available stove and storage space. For a utensil of moderate size, easily lifted with one hand, occupying little space in itself, and intended for use on top of the stove only, a

1 Quoted matter in this chapter is taken from Farm House Series No. 5 of the Cornell Reading-Courses,—"Choice and Care of Utensils," by Ida S. Harrington.

Courtesy of N. Y. State College of Agriculture

Figure 9. Various Styles of Handles Used in Kitchen Utensils

fairly long handle is best; it does not get in the way of the cover or of the contents to be poured out; moreover, it may be so constructed as not to grow uncomfortably hot to the hand, either by being made hollow, or by being covered with wood as in the case of chafing dishes, coffee percolators, and the like.

"The wooden handle is better adapted, however, for use on oil, gas, or alcohol stoves than on coal or wood stoves, since with the former the area of heat does not reach the wood sufficiently to crack it. Birch is the most durable wood for the purpose, but the attractiveness of ebony or teakwood handles generally leads to the choice of some wood that can be given the ebony finish.

"It is convenient, at times, to have a utensil that may be transferred at will from the top of the stove to the oven. For this purpose utensils are made with a very short handle or with two handles of the sugar bowl type.

"The half-circle metal bail, reaching, basket fashion, from one side of the utensil to the other, is best reserved for utensils so large in themselves as to require much stove and storage space and needing two hands to lift them. In this type of bail the wooden protector, hanging against the side of the kettle and very close to the fire, soon becomes cracked, breaks off, and makes necessary the use of holders; moreover, the

bail is likely to get in the way when the cover of the utensil is being adjusted or when the contents are being poured out.

" The choice of handles that do not grow uncomfortably hot is to be considered even in the matter of measuring cups. Tests with tin, aluminum, and glass measuring cups prove the glass to be as much more comfortable to handle as it is easier to clean than the other materials. Aluminum conducts heat too readily to make practical any utensil having a handle of the same material."

See Figure 9 for illustrations of these different styles of handles.

Covers

Covers may fit tightly or loosely. " For long, slow cooking, when the purpose is to conserve heat, moisture, and flavor, a tight-fitting cover is necessary. For rapid boiling, when much steam is being produced, an easily removed cover is an essential safeguard."

Lips

" Lips of utensils should be on the side that is convenient, according as we are right-handed or left-handed. . . .

" Most utensils are designed to be held in the right hand while pouring one liquid into another. This necessitates either stirring with the left hand — a diffi-

cult operation for those who have been trained to the use of the right hand all their lives — or alternately pouring and stirring with the right hand, with the chance, whenever the saucepan is set down, of spilling a drop that will require wiping up later.

" A saucepan designed to be held in the left hand, leaving the right free for stirring would, in the language of scientific management, ' rid us of poor tools, awkward methods, and unnecessary motions.' "

Ease of Cleaning

" In order to insure ease of cleaning, a utensil should be made of one piece of metal with rounded sides, not with seams and corners. It should not have a rolled rim with a rough edge underneath. The joining of utensil and handle should not offer grooves or tunnels as gathering places for particles of grease, dust, and soap. It is important that the inside rather than the outside of the utensil be smooth, polished, and consequently easy to clean. The opening should be wide enough to permit easy access to every part of the utensil. The modern teakettles, made of smooth, non-absorbent material, with an opening large enough to admit the whole hand, are sanitary and time-saving examples of this. They offer no excuse for leaving the teakettle unemptied and undried, with beads of slowly condensing steam roughening and rusting it.

" Given a well-made utensil, much of the ease of

cleaning depends on the preparatory care that is given it before beginning to use it and on the care taken of it after it is in use."

Suggestions for the care of the various materials of which utensils are made are given in Part I.

Size and Shape

Utensils should be of the proper size and shape for the amount and kind of cooking to be done.

"The pan that makes an ideal omelet for three persons would produce a very unevenly cooked dish if used for an omelet for six. The breakfast cereal for a small family, if put into a large kettle in the fireless cooker, would soon lose its small stock of heat and remain raw. . . .

"If a gas or an oil stove is used, the size of the bottom of the utensil greatly affects economy of fuel, time of cooking, and quality of the finished product. If the flame spreads beyond the edge of the utensil, heat is wasted. If the flame strikes only one point, there is danger of scorching food and utensil at that point; this leaves part of the product underdone unless constantly stirred into the area of heat. If utensils fail to fit the burner, a thin stove lid of the proper size may be placed over the flame.

"The time needed for evaporation, or boiling down, depends on the amount of surface exposed; hence, evaporation will go on more rapidly in a utensil that

flares at the top than in one the top and bottom of which are of the same size. The contents of a utensil made of material that is a good conductor of heat, such as aluminum, will boil down more rapidly than if put into an enameled ware utensil of the same size."

Chapter XX

HISTORY OF COOKING UTENSILS

Primitive Cookery

One of man's earliest discoveries was how to obtain fire by striking a spark with flint. As soon as he learned this, he immediately applied the knowledge to the preparation of his food. Utensils for cooking the food were, of course, his next need, and thus he soon found a way of holding meat on a stick before a fire. This crude method was the forerunner of the broiler.

Since primitive men subsisted largely on meat, fish, fruits, nuts, and berries, the process of roasting was the next step to broiling in the science of cookery. Man early discovered that the meat and fish would be more thoroughly cooked if they were heated slowly in the glowing ashes instead of being held over the hot flames.

The people who lived in the valleys of the Euphrates and the Nile, where flocks, herds, and wild animals were scarce and where grain grew wild in great abundance, early learned the food values of wheat, barley, and rye. After grinding the grain coarsely between two stones, they parched it by roasting it among the ashes. When some bold spirit mixed a little of the

coarse meal with water and patted it into a rough cake, the first biscuit was baked in the ashes.

Before he learned how to mold vessels from metals or hew them from wood, he devised the method of using the hides of animals for bags, which he filled with water, into which he dropped hot stones, which caused the water to boil, and thus cooked the meat or the other food. In a similar way the American Indian braided baskets of grass and willow, filled them with water, and brought the water to a boiling point with hot stones. These simple vessels were the forerunners of our pots and kettles.

In cold or rainy weather he learned to make a hot stone pit in which food could be covered while cooking. This pit was the predecessor of all ovens.

In Mexico and some Oriental countries cooking is done on hot stones and in baskets even to this day.

Early Records

Our knowledge of these facts is derived from actual pictures showing the cooking operations of bygone ages. The earliest known pictures of baking are found on the rock tombs of Egypt. Figure 10, which dates back to about 3,000 B. C., shows two men baking unleavened cakes in the ashes. One has been kneading the dough in what is probably a round stone dish. The other has a cake in one hand and a cake turner in the other.

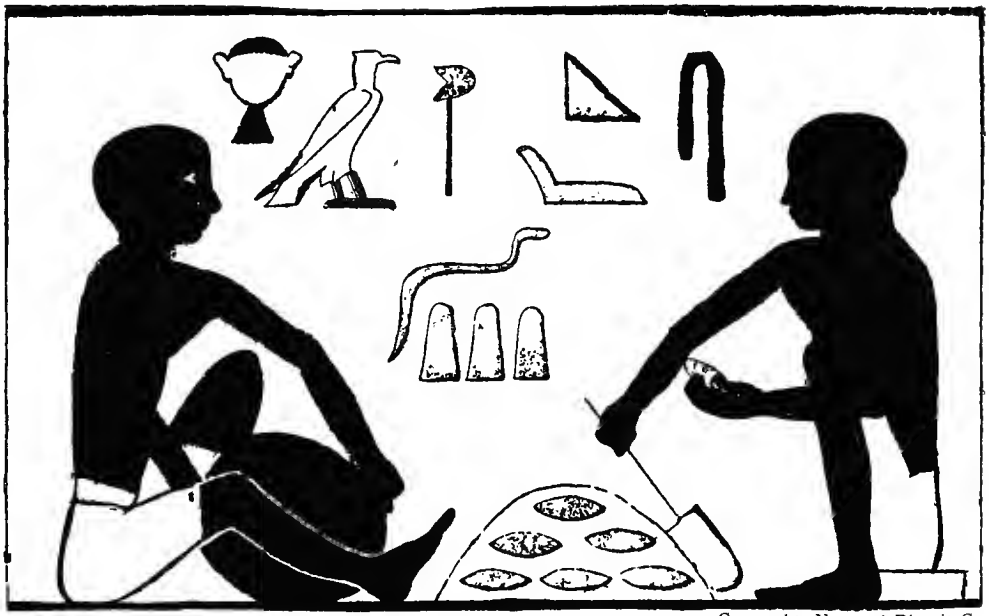


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Figure 10. Ancient Egyptians Baking Cakes in the Ashes (From an Egyptian Tomb)

Other records show cakes being baked on a stone slab raised a little from the ground and covered with several layers of small coals, on top of which the cakes are baking.

A very curious oven, in which the fire is built inside and the bread baked on the outside, is shown in another picture.

Ancient Babylonian and Assyrian records also show very interesting details of cooking processes.

From Ancient Greece there come also other interesting pictures. Figure 11 shows a Greek baker sitting with a slab of stone in front of him, which he has used as a kneading board. He is placing the cakes or bread over a gridiron. This is the earliest picture of a broiler of this type.

The Next Step in Utensils

These crude utensils were used for a long time during the ages when man was little more than a savage. But as he developed skill in working different materials, he applied his knowledge to making cooking vessels.

One of the very earliest discoveries was the way to make bronze, which is an alloy of copper and tin. This alloy was so widely used and for so long a time that a whole epoch of ancient history is known as the Bronze Age. This material was long used for cooking utensils.

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Figure 11. Ancient Greek Cooking Food over a Gridiron

The making of pottery was another early discovery. Utensils of this material are found in almost every place where the ruins of ancient civilization have been discovered.

Cooking Over the Open Fire

For centuries the method of cooking was over the open fire. Even after houses were built, the open fireplace was used for cooking as well as heating. The shape of utensils was adapted to this use and therefore remained about the same for many years. All utensils used over the open coals were provided with

legs to lift them from the coals, and long handles with which to manipulate them. The huge iron pots, designed to hold large quantities of meat and food which could be left cooking for a long time, weighed sometimes 30 or 40 pounds. They were suspended from wooden poles, and later from iron cranes, by pot hooks of different lengths, to regulate the distance from the fire. The shape of these pots was that of a deep globe, with a flaring rim at the top to keep out the smoke and flames.

An inventory of household belongings kept by a colonial dame in Hartford, Conn., lists among the possessions: "2 brasse skillets, 1 ladle, 1 mortar all of brasse, 1 brasse pot, 2 small pewter dishes, porringers, stewpan, wooden cups and platter, trenchers, drinking horns, firkins, cowls, and powdering tubs."

This list names many articles which are not used today, and shows the development in the art and practice of house furnishing.

The Introduction of the Stove

A great change took place in the shape and size of utensils when the stove was substituted for the open fire. The size was materially reduced, because it was impossible to construct stoves large enough to accommodate the huge kettles used over the open fire.

It was not until 1798 that the first cook stove was used in this country, although stoves for heating pur-

poses only had been made in Alsace as early as 1490. Benjamin Franklin invented the famous Franklin stove and printed a pamphlet on his own press showing how wasteful it was to use whole logs for fuel. The fuel for the early stoves was wood.

By 1850 coal ranges were manufactured for general cooking purposes, and for half a century they held sway. But there came a time not many years ago when the price of coal began to rise, and the gas range was found to be cleaner, as it was free from dust and ashes, economical of fuel and time, and altogether more desirable for family use.

Gas ranges are a comparatively recent invention. They were first used where a supply of natural gas was found. As was the case with other changes in fuel, the use of gas has changed the shape of the utensils employed. The flame of a gas stove is very intense and is on the surface of the range instead of being in a fire-box. Therefore the utensils must be shallower.

The use of electricity in cooking is still for most people limited to a few accessories, such as percolators, broilers, toasters, etc., because of the cost of the current, and because the best of nickel and copper are required for material and highly skilled labor for the manufacture, thus bringing up the cost.

Influence of Machinery

The introduction of machinery has influenced the

manufacture of kitchenware, as it has that of all products. The perfection of dies (see Chapter II) made possible the manufacture of all sheet metal utensils, and brought their cost within limits. Before this, utensils had to be hammered and soldered into shape. The French were the first to apply the punch and press to the manufacture of kitchenware.

Chapter XXI

SUGGESTIONS TO SALESPEOPLE

Arrangement, Display, and Care of Stock

A department containing such a multiplicity of articles as the Housefurnishings Department needs careful study in order that the arrangement may bring out the best features of the individual articles, as well as present an attractive whole. The individual salesperson is often not responsible for the appearance of the entire display, but the displays on the separate tables are largely at her disposal.

An artistic arrangement is not so much to be striven for as one which will be valuable in suggesting articles to the customer. A display of the different utensils for the same use, or of different utensils needed for completing a certain piece of work, will often jog the customer's memory.

For instance, an interesting display may be made of the different utensils needed in making pastry, or in the summer and fall months for canning and preserving fruits and vegetables. During the spring and fall housecleaning periods, displays of long-handled

brushes, dusters, cleaning cloths, and other cleaning implements are sure to attract attention.

When a customer comes into the department with a definite idea of some one article which she wishes to purchase, such arrangements as those described often result in the sale of many additional things that she may not have thought of at all.

Caution is needed, though, not to urge the customer too much, nor to induce her to buy more than she can use — say, a number of similar dishes when one or two would fill her requirements. Such overselling is likely to cause dissatisfaction with the store and with the salesperson.

As in other departments, new devices, especially labor-saving ones, should be kept to the fore, so that there will be less danger of dead stock.

It is also very important that the stock be orderly and clean. Straight piles of shining pans, and long even rows of kettles are attractive, while disarray repels. Customers have grown particular in this respect and quickly notice untidy and carelessly kept stock, since courses in domestic science, given in recent years, all lay stress on orderliness and sanitation.

Knowledge of Goods

As has been reiterated throughout this book, the essential of successful salesmanship is a knowledge of the goods in the department. Every chapter has been

written with a purpose — to furnish the salesperson with definite, specific information upon her merchandise. These facts are often called "talking points," or "selling points."

In connection with each material and kind of merchandise, suggestions have been made which should make a saleswoman intelligent about that subject and give her a confidence in her own judgment which will make her opinion valuable to the customer.

She should not become so partial to certain kinds of utensils that she cannot think of her customer's problem, but rather place before her the advantage of each article and its value for the particular household and pocketbook under consideration.

If a saleswoman has a real love of efficient housekeeping she cannot help doing good work in the Housefurnishings Department.

Chapter XXII

SUGGESTIONS TO CUSTOMERS

The Necessity for Information Concerning Household Articles

The chapters in this book have been addressed to those who sell housefurnishings, but they are of equal if not greater importance to the housekeeper who will use the articles.

Housekeeping is both a science and an art and it is highly unfortunate that so many women begin such important work with a scrappy and inadequate knowledge of its essential principles and of the tools which are necessary for its successful accomplishment.

Many women buy their housefurnishings in a blind way "because Mother used that kind," or because a friend has suggested certain utensils, or because they look attractive. Mother may have been a most efficient housekeeper but there have been many recent inventions which she may not know about. The use of gas and electricity has changed conditions and the modern knowledge of hygiene makes new demands on the housekeeper.

Knowledge of Individual Needs

Every woman should know what are her particular needs in the way of cooking utensils, laundry and cleaning equipment, and small household requirements. The chapter on selection of an equipment will be of service here because it has been compiled by expert and experienced housekeepers. But even here a young housekeeper may begin with only half or less than half of the suggested articles, adding to them as she finds that the necessity arises.

Knowledge of Sizes and Shapes of Articles

The suggestions as to shapes, lips, handles, and other details should be given close attention, as such trifles make a great difference in comfort and sometimes in efficiency.

Knowledge of Time-Saving and Labor-Saving Devices

Many women refuse to try new inventions intended to save time and labor because they do not realize how much time is consumed in washing and drying dishes, preparing food, and other details of housekeeping. Every labor-saving invention has had to win its way slowly against the prejudices of conservative women. Some attempts at saving labor make more work in the end, but every woman should remember that the few

minutes saved several times a day make a great difference when added together.

Knowledge of Cost-Reducing Appliances

Fuel-saving has become increasingly important as the cost of fuel has gone up. In addition to having the right kind of stove and burner, if one uses gas, there is a great difference in the amount of fuel required for heating different materials in cooking utensils. The fireless cooker and other devices for conserving heat should be made use of and each utensil considered according to its heat requirements.

The material and construction of utensils should be studied from the viewpoint of durability. For some uses and in some hands an inexpensive article will "do just as well." Each housekeeper must judge for herself what she can afford to get in more expensive but lasting form and what may be purchased at the lowest price. A good motto is "never get anything which will be too good to throw away but not good enough for the purpose." Sometimes one must fill in temporarily with cheaper articles but, if so, try to get those that will serve the emergency at the lowest possible cost.

Maintaining a Satisfactory Equipment

Every housekeeper should use all the judgment and carefulness of which she is possessed in the selection

of her "tools." She should keep them in good condition and replace broken or worn out articles promptly. She should be on the watch for improvements and useful inventions and try them out before condemning "fads." Upon the smoothness and ease with which the household machinery runs depends much of the happiness of the home.

Chapter XXIII

CLASSIFICATION OF STOCK OF A TYPICAL HOUSEFURNISHINGS DEPARTMENT

DIVISIONS

A. Utensils for Cooking Foods
B. Utensils for Preparing Foods
C. Equipment for the Sink
D. Laundry Articles
E. Equipment for Cleaning
F. Special Articles

A — UTENSILS FOR COOKING

1. Broiling, Baking, Roasting

(a) Articles

Wire Broilers
Gridirons
Toasters
Roasting Pans
  Self-Basting
  Drip or Baking
Dutch Ovens
Bread Pans
Cake Pans
  Loaf
  Layer
  Angel or Tubed
  Muffin

Cake Coolers
Patty Pans
Pie Plates
Pudding Pans
Deep Baking Dishes
Bean Pots
Casseroles
Ramekins

(b) Materials
Enameled Ware
Aluminum
Tinned Ware
Earthenware
Glassware
Iron
Wire

2. Boiling, Stewing, Steaming, Braising
(a) Articles
Kettles
Tea
Preserving
Berlin
Windsor
Fish
Stewpans
Saucepans
Berlin
Windsor
Double and Triple
Teapots
Coffee-pots
Coffee Percolators
Double Boilers
Asparagus Boilers
Corn Boilers

Ham Boilers
Ladles, Dippers
Steamers
Steam Cookers
Poachers
Pot Covers
Tea Balls

(b) Materials
Aluminum
Enameled Ware
Tinned Ware
Iron
Nickeled Ware

3. Sautéing, Frying

(a) Articles
Frying Pans
Skillets, Spiders
Frying Kettles
Frying Baskets
Griddles
Chop or Steak Covers
Cake Turners
Waffle Irons
Omelet Pans

(b) Materials
Iron
Aluminum
Soapstone
Enameled Ware
Tin
Wire

B — Utensils for Preparing Foods

1. Chopping, Cutting, Grinding

(a) Articles
Food Choppers

Chopping Knives and Trays
Coffee Mills
Cutlery
Apple Corers
Apple Parers
Fruit and Vegetable Slicers
Graters
Can Openers
Biscuit Cutters
Knife Sharpeners
Ice Chippers

(b) Materials
Iron and Steel
Tinned Ware
Wood

2. Stirring, Beating, Pressing, Rolling

(a) Articles
Spoons, Forks
Egg Beaters
Mayonnaise Beaters
Cream Whippers
Bread and Cake Mixers
Lemon Squeezers
Potato Mashers
Fruit Presses
Bread, Meat, and Cake Boards
Rolling Pins
Butter Paddles and Molds
Cake Turners

(b) Materials
Wood
Glassware
Marble
Iron
Tinned Ware

Aluminum
Wire

3. Separating, Straining
   (a) Articles
      Colanders, Strainers, Sieves
      Egg Separators
      Funnels
   (b) Materials
      Enameled Ware
      Tinned Ware
      Aluminum
      Wire

4. Measuring
   (a) Articles
      Spoons
      Cups
      Measures
      Scales
      Scoops
   (b) Materials
      Iron, Steel
      Tinned Ware
      Aluminum
      Glass

5. Containers
   (a) Articles
      Bowls
      Jars
      Pitchers
      Cups
      Plates
      Platters
      Boxes

Cans
Bread Raisers
Molds
Buckets, Pails
Trays
Dinner Pails

(b) Materials
Earthenware
Glassware
Wood
Tinned and Japanned Ware
Enameled Ware

C — Equipment for the Sink

1. Articles
Dishpans
Rinsing Pans
Draining Pans
Wash Basins
Soap Dishes
Soap Shakers
Dish Mops, Dish Cloths, and Pot Cleaners
Plate Scrapers
Sink Strainers
Sink Brushes and Shovels

2. Materials
Tinned Ware
Galvanized Ware
Enameled Ware
Fiber
Cotton
Copper
Wire
Wood
Rubber

D — Laundry Articles

1. For Washing

(a) Articles

Boilers
Washboards
Tubs
Clothes Washers
Clothes Wringers
Clothes Lifters
Clothes-pins
Clothes Baskets and Hampers
Clothes Lines

(b) Materials

Wood
Galvanized Iron
Glassware
Tinned Ware
Fiber
Rubber
Iron, Steel
Copper
Hemp
Cotton
Rattan
Wood

2. For Ironing

(a) Articles

Flatirons
Tables
Boards
Ironing Stands
Iron Heaters
Clothes Horses
Curtain Stretchers

(b) Materials
Iron and Steel
Nickel
Wood

E — Equipment for Cleaning, Etc.
1. Articles
Floor Brooms
Whisk Brooms
Mops
Wet
Dry
Mop Wringers
Pails
Dust-pans
Brushes (See Chapter XI)
Carpet-Sweepers
Carpet-Beaters
Dusters
Cleaning Cloths
Chamois
Feather Dusters
Steel Wool
Scouring, Cleaning, and Polishing Materials
Ash Cans
Garbage Cans
Ash Sifters
Coal Hods
Coal Shovels
Crumb Pans
Oil Cans
Watering Pots
Bedroom Accessories
Wash Bowls and Pitchers
Toilet Stands
Slop Pails
Chambers

Candlesticks
Bathroom Accessories
Foot Tubs
Baby Baths

2. Materials
Broom Corn
Wood
Vegetable Fiber
Cotton
Rattan
Leather
Iron
Galvanized Ware
Japanned Ware
Enameled Ware

F — Special Articles

1. Refrigerators
(a) Kinds
Side-icing
Top-icing
Ice Chests
(b) Materials
Wood
Porcelain
Steel
Galvanized Steel
Enameled Steel
Glass
Brass

2. Ice-Cream Freezers
(a) Kinds
With Crank
Single Action
Double Action
Crankless

(b) Materials
- Wood
- Galvanized Steel
- Tinned Ware

3. Fireless Cookers
   (a) Materials
   - Wood
   - Steel
   - Aluminum
   - Soapstone
   - Mineral Wool
   - Cork
   - Asbestos
   - Excelsior

4. Kitchen Tables
   (a) Materials
   - Wood
   - Porcelain
   - Zinc
   - Glass
   - Marble

5. Baskets
   (a) Styles
   - Laundry Baskets
   - Hampers
   - Market Baskets
   - Scrap Baskets
   - Fireside Baskets
   - Lunch Baskets

   (b) Materials
   - Splints
   - Reed or Rattan
   - Bamboo
   - Vulcanized Fiber

Appendix

Books for Reference

The New Housekeeping, C. Frederick. Doubleday, Page.
The Efficient Kitchen, G. B. Child. McBride, Nast & Co.
Home Economics, M. Parloa. Century.
Foods and Household Management, Kinne and Cooley. Macmillan.
Choice and Care of Utensils, Ida S. Harrington. Cornell Reading Courses, Cornell University. (Free to residents of New York State.)
Housekeeper's Handbook of Cleaning, Sarah J. McLeod. Harper.
A Guide to Laundry Work, Mary D. Chambers. Boston Cooking School Magazine Co.
Chemistry of Common Things, Brownlee, Fuller, Hancock, Whitsit. Allyn & Bacon.
Household Physics, C. J. Lynde. Macmillan.
Lumber and Its Uses, R. S. Kellogg. Radford Architectural Co., Chicago.
Dies, Their Construction and Use, Woodworth. Norman W. Henley Publishing Co.
American Journal of Home Economics.
Good Housekeeping Magazine.
Housefurnishing Review.
Wear-Ever Magazine.
Wooden and Willow Ware Trade Review.
Crockery and Glass Journal.
Pottery, Glass and Brass Salesman.
Wood Worker.
Brooms, Brushes and Handles.

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